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# Municipal and Private Operation of Public Utilities

VOLUME III

# Municipal and Private Operation of Public Utilities

VOLUME III

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# Municipal and Private Operation of Public Utilities

REPORT TO THE

NATIONAL CIVIC FEDERATION

– Commission on Public Ownership and Operation

IN THREE VOLUMES

PART II—VOLUME II

REPORTS OF EXPERTS—UNITED KINGDOM

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Dr. MILO R. MALTBIE acted in Professor Parsons' place during his illness.

Mr. J. W. SULLIVAN acted in Mr. Edgar's place during his absence.

# EDITORIAL NOTE

When the investigation was being planned by the Sub-Committee of Five, the various phases of the question of municipal *vs.* private operation of public utilities were grouped into four divisions: One included those relating to the history of the undertaking, the attitude of the public toward it, the franchises granted, the methods of public regulation and control, and the statutes and ordinances in force. The second covered wages, hours, conditions of labor, etc., the organization of the undertaking and the political phases of the problem. The third embraced engineering matters, and the fourth included the financial and accounting factors.

In order that each expert might know exactly what matters were to be reported upon by him and what were assigned to others, and in order that no detail should be overlooked, specific questions were prepared to cover every fact which seemed important or essential. The members of the committee and others interested in the subject of municipal ownership were asked to submit questions and to make suggestions. All were then considered, codified and arranged in systematic order by a sub-committee. Some matters were included that later were found not to be important, but it was thought wise to include too much rather than too little, to go too far into the details rather than to limit too narrowly the investigation.

Further, in order that the Commission might have before it all the available facts germane to the problem, whether called for in these specific questions or not, the experts were instructed as follows:

"The purpose of this investigation is to obtain all the essential facts to enable the Commission to determine the relative superiority of municipal or private operation of public service industries and the conditions most favorable to efficient management. For this purpose, the following schedules have been prepared. It is believed that they cover the essential points upon which data subject to quantitative measures may be obtained. * * * If any facts should be discovered that are relevant to the investigation, but which are not called for in the follow-

ing schedules, full memoranda should be made upon separate sheets and sent to the Committee."

After the specific questions had been decided upon, they were classified into the four divisions above mentioned and called: Schedule I—General, Historical and Legislative; Schedule II—Organization, Labor and Politics; Schedule III—Engineering Matters; Schedule IV—Finance and Accounting.

These Schedules for the undertakings in the United Kingdom were then assigned to the following persons:

Schedule I—all undertakings—Dr. Milo R. Maltbie.

Schedule II—all undertakings—Mr. J. W. Sullivan and Prof. John R. Commons.

Schedule III—gas works—Mr. J. B. Klumpp and Mr. William Newbigging, of Manchester, Eng.

Schedule III—electric lighting plants—Mr. A. E. Winchester and Mr. J. B. Klumpp.

Schedule III—street railways—Mr. Norman McD. Crawford and Mr. J. H. Woodward, of London.

Schedule IV—all undertakings—Mr. R. C. James and Mr. E. Hartley Turner, of Manchester, Eng.

The duty of the experts was to report the facts in accordance with the prescribed forms. They were neither asked nor expected to draw conclusions, nor even to tabulate or arrange the facts, but to fill out the printed blanks, and to leave the work of analysis and of drafting conclusions to the members of the Commission or duly appointed committees. This fact should be kept in mind in reading the following pages, for no attempt has been made in this volume to analyze the data collected or to put the facts into a readable report, but merely to transcribe into a form as succinct as possible the answers given by the experts in the various Schedules for the United Kingdom. The analyses of these Schedules appear in Volume I.

The transcription of the schedules for this volume was performed under the direction of Dr. Milo R. Maltbie. So far as possible the answers were grouped and tabulated. To further facilitate comparisons, the municipal undertakings were given first in the order of their size, and then the private companies, according to size generally. Where no answer was given in the schedule, the name of the undertaking is followed generally by a dash "——." The presence of dots " .... " in the tables means that the inquiry is not applicable, or that there were no data to be given. Where an answer could

not be obtained, but yet the inquiry is applicable, or where there is doubt as to the facts, a question mark is used " ? ". Estimates are preceded or followed by the letter " E."

In order that every possible precaution should be taken to prevent errors in transcription and proof-reading, and in order that every expert might examine before publication the facts he had reported, the printed proof was submitted to him for approval, and printing was not begun until this proof had been corrected, approved by him and returned. Of course it is likely that some errors have crept in, due to human fallibility, but it is to be hoped they are few.

In addition to the matter printed in this volume, the experts have submitted many exhibits, including maps, plans, photographs, printed documents, statutes and bound volumes. It has not been considered necessary or wise to attempt to reproduce them, as they constitute a small library by themselves; but all will be deposited in the Library of Columbia University, together with the original Schedules, where they may be consulted.

The undertakings in the United Kingdom selected for investigation by the Committee were as follows:

*Municipal Gas Works.*

Birmingham—Glasgow—Manchester—Leicester.

*Private Gas Companies.*

London: The South Metropolitan Gas Company.
Newcastle-upon-Tyne and Gateshead Gas Company.
Sheffield United Gas Light Company.

*Municipal Electricity Supply Works.*

Manchester—Liverpool—Glasgow—St. Pancras Borough (London).

*Private Electricity Supply Companies.*

Newcastle-upon-Tyne Electric Supply Company Limited.
Newcastle and District Electric Lighting Company Limited.
City of London Electric Lighting Company Limited.
Westminster Electric Supply Corporation Limited.
St. James and Pall Mall Electric Light Company Limited.
Central Electric Supply Company Limited.
(The last four are London companies.)

*Municipal Tramways.*

Glasgow—Manchester—Liverpool—London County Council (Southern System only).

*Private Tramway Companies.*

London United Tramways (1901) Limited.
Dublin United Tramways Company (1896) Limited.
Norwich Electric Tramways Company.
Bristol Tramways and Carriage Company Limited.

With one exception, all of these undertakings were examined and reported upon by the experts. Municipalities and companies were treated exactly alike and the same forms of reports were used for both groups. The companies even permitted our experts to make a physical valuation and to examine fully their financial status. The Bristol Tramway Company alone refused to permit an investigation. To all others the Committee is under great obligation for their unstinted efforts to make the investigation a success and for the great amount of work performed gratuitously and freely. Without such generous and whole-souled assistance, the investigation could not have succeeded. It is impossible to express too high an appreciation of the generous reception accorded to the Commission, especially when one remembers that the investigation was conducted by a foreign association and primarily for the benefit of cities in a country other than Great Britain.

To Mr. Fay N. Seaton the committee is indebted for valuable editorial assistance, and particularly for the Index to this as well as to the other volumes.

M. R. M.

New York, October 1, 1907.

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# LABOR AND POLITICS

## Gas, Electric Supply and Tramways

## (Schedule II)

By JOHN R. COMMONS AND J W. SULLIVAN

### SUFFRAGE.

The suffrage qualifications of municipal voters in Great Britain are exceedingly complicated and are in continuous process of transition owing to the decisions of the courts. The municipal franchise differs from the Parliamentary franchise mainly through the inclusion of women without male representatives, but partly through the inclusion of occupiers paying less than £10 rent. This makes a difference of 120,000 votes in the London County Council area, where the number on the Parliamentary franchise is 621,180 and the number on the County Council and Borough lists is 742,397. In 21 wards of Glasgow the Parliamentary list has 92,471 names, while the municipal list has 120,267 names.

The restrictions on the suffrage affect mainly the working class vote.

The qualifications for working-class voters fall under three heads:

(*a*) Occupiers of houses or "tenements";
(*b*) Lodgers;
(*c*) Servants occupying separate establishments: ("The Service Franchise").

(*a*) The list of "occupiers" is taken from the main body of the Municipal Burgess Roll—the section which includes women being, of course, omitted.

(*b*) Up to 1906 all persons occupying rooms, or even distinct "tenements," in a house *in which their "landlord" lived,* could only claim, if at all, as lodgers. As will be seen below, the law is now in complete confusion owing to the different interpretations of a legal decision. (Kent vs. Fittall, in the High Court.)

A lodger vote can only be claimed if the room or rooms occupied are *deemed to be* of the clear annual value of £10. It depends upon each separate "Revising Barrister"—(the functionary before whom votes must be claimed and sustained)—as to what evidence of value shall be accepted.

It is not necessary that an actual rent should be paid. If a son should be helping in his father's business and receiving food and lodging as his remuneration, he would be held to be a "lodger." If the house were in a "good" neighborhood no further evidence would be asked as to value.

Usually the evidence required is that of the "rent-book" showing the lodger's weekly payments. Not uncommonly, sons who in fact pay no rent for their room, have dummy rent-books made up, and the barrister cracks jokes about the marvellously clean state of these books, or the peculiar fact that entries twelve months old look no blacker than the last entry of all! The general feeling of barristers and of the party agents is to interpret the law favorably to claimants on this point of actual payment, and even as to the actual value of the room, if the applicant appears an intelligent, respectable man. But the room must be in his sole occupation and he must have the right to turn the key and exclude anyone else. Any doubt on this point would spoil his claim.

There is no *Municipal* "lodger" franchise. The "occupier" of a tenement—or under the new decision an independent, uncontrolled room—is not restricted by any question of annual value. Therefore, if the new position be maintained, large numbers of working-men who have not been able to claim "lodger" votes will now be able to claim burgess votes and so will become both Municipal and Parliamentary voters. This has already happened in many boroughs so far as this year's electoral lists are concerned, and the burgess rolls have been increased by 30 to 40 *per cent.* in some cases, and even by *over* 50 *per cent.**

(*c*) The "service franchise" covers such cases as caretakers, or gardeners or coachmen living in separate rooms over stables.

*Twelve Months Residential Term:* In all cases alike the claimant must have been in residence from July 15 to July 15 of succeeding year. But there is an interpretation of residence which allows an "*occupier*" (but not a lodger or "service" voter) to claim what is called "successive occupation." That is to say, his claim is sound if he has "occupied" even several different houses or tenements in turn, so long as they are within the same municipal borough, and so long as the occupations were successive. The fact that the "occupations" were in different Parliamentary divisions of the borough does not matter. His vote will be enrolled in that division in which he is residing at the end of the term.

London being divided into 28 boroughs, and movements to follow or seek work being more frequent than elsewhere, the number of workmen disfranchised is unduly large. In 1905 there were in the County of London 1,450,000 men of 21 years and upwards. The number of Parliamentary electors in the same area was 621,000—a considerable discrepancy. This is largely due to "movements," but there is also an important factor in the large

* In one case 57 per cent. (see note below).

numbers of workmen—especially those with not more than one or two young children—who occupy a room in a furnished house, or in a house in which the landlord also resides. Many of these cannot show a value of anything like £10 per annum. Moreover, one "move" within the qualifying period, even into the next house, has destroyed their claim. This is the class affected by the decision of *Kent* vs. *Fittall*. By this decision, if the occupant of the room can establish the fact that his landlord has no "control" over the room—i. e., that the occupant fulfils all his own services and is in effect as independent as he would be in a self-contained tenement—he is not a lodger, but an "occupier."

Prior to the making-up of the burgess rolls, the Local Government Board called the attention of all municipal authorities to this important decision, and as a consequence a number of such authorities added all such cases to their burgess roll. The different revising barristers have taken varying views of this proceeding, and the different effects of their rulings are seen in the fact that the additions to the rolls vary from less than 1,000 to more than 10,000 in a borough. In Tower Hamlets (Bow Division), with 11,197 voters in 1905, over 3,000 new occupiers are added under the Kent *vs.* Fittall rule. In Dulwich Division (in 1905, 14,869 voters) over 4,000 are added. In Shoreditch the 1905 register showed 14,300 names. This year's will contain 22,000. Increase, 57 per cent.* In St. Pancras Borough (with 28,000 former voters) over 10,000 new voters will be added. If this new development is once established,—as there appears no doubt it will be,—a revolution in working-class franchise will have been effected in Great Britain. In London alone it seems that not far short of 100,000 electors—practically all of the working-class—will be added to the Parliamentary rolls.

In addition to the disfranchisement of lodgers, a householder is also disfranchised if he, or his wife, children, father, mother, or the father or mother of his wife, have had in or out poor relief from the Board of Guardians, or have had in-relief from a private charity, such as an old-folks' home. Lists of such persons are furnished the election overseers by the Board of Guardians or the managers of the private charity. In hard times this disqualification causes whole blocks and streets of householders to be wiped off.

But there is a tendency of the High Court to mitigate the severity of the exclusion of householders, *e. g.*, medical aid is no longer a disqualification, even if it be limited to a prescription by the physician of food for underfed children. Again, in the case of wife and children, the Board of Guardians issues its warrant direct upon the householder for their support, but in the case of others they must get an order from a magistrate. Hence, if the magistrate refuses to issue an order, the householder is not disqualified, and magistrates generally refuse nowadays if the householder will agree to pay only a small part of the cost of support, say 1s. a week out of the 12s. or

* Decision arrived at in Court September, 1906, by all parties, not to oppose new class of voters, of whom Town Clerk supports 8,000 claims.

13s. which the Board of Guardians is spending. This has restored many hundreds to the register, for it covers the generally accepted custom among poor people of allowing the parents to go to the workhouse during hard times or when the breadwinner is out of work, and then taking them back again when work is found. Magistrates look upon cases of this kind as evidence of good intentions and not deserving of penalties.

*Making up the Register:* The way the register is made up is as follows: The municipal authorities prepare their burgess' roll from the names of "occupiers" as appearing on their rate-books. These occupiers do not necessarily pay rates directly. In England (as distinguished from Scotland) the majority of working-class occupiers pay a lump sum per week to the house-owner, who in his turn pays the rates upon all his houses. But every occupier's name should be upon the rate-book.

The disqualifications for voters are (*a*) conviction of a crime or felony; lunacy; receipt of poor relief (by order of an Election Petition Court) on account of bribery or corruption; (*b*) being minors or aliens; (*c*) being women (from the Parliamentary franchise only); (*d*) non-payment of rates (from all votes).

If a house-owner has omitted to pay the rates upon a house, the occupier is disfranchised.

Subject to these exceptions, all occupiers' names should appear upon the burgess roll; the women being shown in a separate section. If an occupier's name has appeared on the previous roll he need not make a fresh claim. A claimant for a lodger Parliamentary vote must renew his claim each year. Any burgess may object to a name being on the voters' list, but must serve the claimant objected to with notice of his objection by registered letter. The claimant in that case must appear to defend. An objector must produce the receipt for the registered letter or he will not be heard. In actual practice, objections are made by the party agents or by their nominees. It is a common practice for new claimants, if their politics are not well known, to be instructed to go to the agent of the opposing party and ask him to make the claim. A good agent always sees that his new claimants do this.

The "Revising Barristers" are appointed by the Judges on Circuit and are paid 250 guineas ($1,270) for their work, which lasts two or three weeks. The general fairness of their decisions is very seldom questioned. Considering the interests at stake, and the absurdities of the election law, the Revision Courts work with remarkable smoothness and fairness.

The newly made register of municipal voters comes into force in the borough elections in November of each year—that is, about one month from its completion. Special registers are prepared for each Parliamentary Division, excluding the women burgesses, and including the lodgers and "service" voters. These registers do not come into force until January 1 of the succeeding year. Hence a voter cannot get an opportunity of voting in a Parliamentary election until at least eighteen months after taking up residence in a bor-

ough. As Parliament can last for seven years, a citizen might live for eight years in one house before getting an opportunity to vote. In the case of municipal elections, which occur more frequently, the extreme limit of residence required reaches two and one-half years.

The registry of voters is practically made up by the Party Agents of the Liberals and Conservatives. They have become so highly expert that the constituted overseers accept their agreement without question. There usually remain not more than twenty or thirty cases in a district for the Revising Barrister. The agent of a new party, like the Labor party, has the same opportunity before the overseers and the Revising Barrister, but he is not so effectual on account of his lack of experience. Mr. F. W. Galton, election agent in London, in a brief article contributed to the Reformers' Year Book, 1906 (p. 81), says: "Theoretically, lodgers may send in their own claims to the overseers. Practically, none of them ever do so. Hence it is safe to say the whole of this 75,000 voters (or 80,000) would be absolutely disfranchised if it was not for the work of the Party Agents in London."

The Party Agents are also depended upon to get small occupiers on the registry, especially where, as in London, the rates are compounded; that is, where the landlord pays the occupiers' taxes. Of course, in such a case the occupier's name does not appear as a ratepayer, and consequently the overseers must depend upon the landlords who are legally bound to return their occupants. These returns are notoriously inaccurate—indeed, it is charged by members of the Labor Party that landlords who are Liberals or Tories leave their tenants off if they do not agree with them in politics.

Since the excluded are mainly from the class of wage earners, it is estimated that fully 40 per cent. of the male wage earners in London are disfranchised. This proportion is larger in London than it is in provincial towns, and especially Glasgow, because of the much larger proportion of lodgers. This follows from the practice in London of the landlords' letting an entire building to one tenant, who thereby becomes the occupier or householder, but who sublets to others, who thereby become lodgers. This differs from the practice in other places where the landlord lets directly to all of the tenants, so that they are thereby occupiers, or householders. The householder is permanently on the register each year unless stricken off, but the lodger must make application each year. That is, the presumption is in favor of the occupier or householder, but against the lodger. There are 80,000 lodgers on the register in London, but fully twice that number are omitted through neglect to claim their rights, and there is an additional 100,000 who are not legally entitled to be on the register. This accounts for 360,000 omissions from the register.

Outside London our informants place the number of disfranchised at 25 to 40 per cent. These must necessarily be only guesses, but they are the guesses of parties closely connected with the operation of the electoral system. In Glasgow, where the landlords let their tenements directly to the tenants, who thereby acquire the householder's franchise, and where the system of compounding

rates is not in vogue, a large proportion is nevertheless disfranchised for delinquency in the payment of rates. This number is estimated at 37,000, as against 145,956 actually on the lists, or 20 per cent. of those who might otherwise have qualified. Estimating the number of women voters at 18,000 (*i. e.*, one-third of the supplementary list of 53,485), it appears that the number of male voters in Glasgow is 128,000 and the corresponding population estimated for 1905 is 799,474. This works out 1 male voter for every 6½ of the population, showing a much smaller disfranchisement than in London.

In addition to the large proportion of adult males who do not get on the electoral lists, there is another large proportion who do not exercise their rights as electors. In ten wards in Glasgow where contests were held in 1905 there were 63,405 names on the electoral lists, and the number of votes cast was 41,651, or 66 per cent., leaving 34 per cent. who failed to exercise their right. This proportion varied from 20 per cent. in the Seventeenth Ward to 45 per cent. in the Eighth Ward.

It is generally agreed by all of whom inquiry was made that the classes disfranchised are the following:

1. The submerged tenth; *i. e.*, the confirmed pauper, semi-criminal and casual labor classes.
2. Reputable workingmen of the poorer paid classes at times of industrial depression.
3. All lodgers in holdings which rent for less than £13 a year. This figure seems to be agreed on in practice in different cities as the minimum rental below which a tenement shall not be entitled to a lodger's franchise in addition to the householder's franchise. This rule practically excludes the sons of all common or unskilled laborers.
4. The sons of the better paid workingmen who could qualify as lodgers, but who dread the publicity, the challenges of the Party Agents, and the exposure of their private affairs. This often excludes also householders challenged and stricken from the lists, who prefer not to contest their rights rather than undergo the exposure.
6. Other classes not wage-earners, especially clerks living at home or as lodgers, and even wealthy young men who neglect to make the application each year for the lodger's franchise.

An additional overbalancing of the labor vote is the qualification which a business or professional man can secure on the strength of his office or place of business while he has his residence in the suburbs. This advantage, however, usually shows itself in only the one or two wards where the banking, wholesale, and commercial enterprises are centered. In two or three cities (Birmingham, Liverpool, Manchester) there are wards where the voters on business qualifications either almost equal or even exceed in number those on residence qualifications. These are, of course, wards

where the suburbanites have their offices, since a person cannot qualify for more than one vote within the city boundary.

## COUNCILLORS.

*Liverpool.* Liverpool is divided into 34 wards[1] with one Alderman and three Councillors for each ward, making 137 members of the Municipal Council. Of these 137, only 25 live in the wards they represent, while 112 live outside the wards which have elected them as their representatives or to which they as Aldermen may have been assigned. Of these 112 living outside their wards, 50 live entirely outside the limits of the corporation and in suburban districts. They have qualified as electors within the corporation by virtue of their places of business. These 50 suburbanites are altogether of the upper business and professional classes. But in addition there are 44 members of the Council living in the six richest residential wards of the city, making altogether 94 members who live in the richest of the residential districts, within or without the corporation, and representing either their own or other wards within the corporation.

This fact becomes even more significant when we contrast the situation in what may be called the working-class wards with that in the residential or "villa" wards. In Liverpool there are twenty wards which may be described as working class, including at one extreme the slums and at the other the homes of the upper artisan class. These 20 wards are represented by 80 Aldermen and Councillors, of whom only 8 live in the wards they represent and 72 outside the wards they represent, and of this number 53 live in the six richest residential wards or the suburbs. On the other hand, of the seven residential wards occupied by the middle and richest classes, 16 representatives live in their wards and only 12 outside. Even these outsiders live in other wards or in the suburbs among people of the same social standing as those whom they represent. In other words, while the strictly working class wards are entitled to 80 representatives they elect two-thirds of them from the residential wards and suburbs, and while the residential wards are entitled to 28 representatives they elect practically all of them from among their own residents. There are also two strictly business and commercial wards represented by business men.

These facts will account in part for the classification of members of the Council according to their wealth. A few of them are described as "very rich men," while at least 100 are "fairly well-to-do" or "moderately wealthy," and only about 20 could be described as poor men. Of course this classification is only a rough one and has not been checked off by Lloyds.

A more accurate classification, but not as significant for our purposes, is that by occupations. This shows 29 wholesale and retail merchants, 12 shipowners, 12 brokers and agents, 9 manufacturers, 12 lawyers, 11 building employers, one trade unionist and

[1] A new ward without an Alderman and with only one Councillor is omitted from this description.

one Socialist. Liverpool shows also a larger proportion of brewers and saloon-keepers than other places, namely 15, but it is significant that these are nearly all manufacturing brewers and not retail liquor dealers. Altogether the Council is two-thirds on the side of the large and small business men and employers of labor, with about one-fifth professional men whose associations are with the business men. With but few exceptions the men of means have acquired their property by their own exertions, and this will be found to be true in all the Councils except that of London.

Our inquiries for other corporations are not so complete as those for Liverpool, but as far as they go they show similar conditions. Birmingham has 72 Aldermen and Councillors for 18 wards, and taking 60 regarding whom we are informed, there are but 10 living in the wards which they represent and 50 living in other wards and the suburbs. The thirteen working-class wards are represented by only 7 members living in their wards and 45 living outside their wards. The 72 members include 17 merchants, 21 manufacturers, 6 lawyers, 5 physicians, 5 brokers, 7 wage-earners, or union officials, and 7 "gentlemen" living on investments.

*Manchester.* Manchester has 123 Aldermen and Councillors representing 30 wards. Of this number, 70 live in the wards they represent, 10 in other wards, and 43 in the suburbs. Of the 13 labor members, 8 live in the wards they represent and 2 live in the suburbs.

*Leicester.* Leicester has 16 wards and a Council of 48 Councillors and 16 Aldermen. Of the Councillors, 32 live outside the wards which they represent (but 8 of them have business premises or offices inside the ward), and 16 live in their wards. Of the Aldermen, 7 live out and 9 live in. Altogether, 39 members of the Council do not live in their wards and 25 live in their wards. The nine working-class wards are represented by 16 non-residents and 11 residents. The Council has 18 manufacturers or employers, 18 merchants, 4 physicians, 3 accountants, 4 trade-union officials, 4 wage earners, 2 solicitors, 3 newspaper proprietors, 2 publicans, 1 land owner, 2 officials of co-operative societies and one government official.

*The London County Council* includes 118 Councillors elected from 58 districts, and 19 Aldermen elected by the Council. The Aldermen are not assigned to any district, and it is only necessary that they qualify as electors within the county area, either on account of residence or business. Of the 118 Councillors, 50 live in the districts they represent and 68 live outside. The Council includes 21 merchants, 15 manufacturers, 18 lawyers, 4 builders, 11 labor representatives, of whom 7 are trade-union officials and 4 socialists. The London County Council is exceptional in having 10 retired civil servants, and 26 "gentlemen," London being a congenial residence for the leisure classes. It is also peculiar in the large number of members who have inherited their property in whole or in part, this number being 34.

The subjoined study of the social and political composition of the London borough of St. Pancras was written by a London journalist at the request of the labor investigators:

*The Borough of St. Pancras*, within the County of London, includes four Parliamentary Divisions, in each of which are two municipal wards. As far as possible the wards have been laid out so as to include some proportion of the more comfortable class in each. This has been even more effectively done in the case of the Parliamentary Divisions (which cover two wards each). The total population of the Borough is 237,149, and the number of municipal electors, 33,376.

The nature of the wards is as follows:

Ward Number One—A number of old houses with parks or large grounds, belonging to wealthy aristocrats (such as Lady Burdett-Coutts); a district of large villas and flats; a small but very bad slum; and a large district of the most respectable class of artisans and mechanics.

Ward Number Two—Every class of workmen, with shops on frontage, and a sprinkling of well-to-do business people.

Ward Number Three—Workshops; warehouses; and a residential district about half of professional men and city merchants, etc., and about half of clerks and working people.

Ward Number Four (Abuts on Regent's Park)—A number of large houses and villas; the rest well-to-do lodging houses and working-class dwellings of all classes.

Ward Number Five—Similar to Four, but including Euston Station; cheap hotels and lodging houses, and a very "dubious" quarter.

Ward Number Six—Almost purely slum; includes King's Cross and St. Pancras Stations; warehouses, shops, cheap hotels, second-rate lodging houses, and a sprinkling of well-to-do people.

Ward Number Seven (Tottenham Court Road)—Large shops and small workshops; good hotels and lodging houses; second and third rate ditto; foreign restaurants and theatres; French, Italian and German (Bohemian) and Anarchist quarters; a number of large "industrial" tenement dwellings.

Ward Number Eight (Bloomsbury)—Some first-class lodging house streets and squares, and many second-class ditto; shops, warehouses, workshops (printers, cabinet-makers, etc.); hospitals and hotels; numbers of "tenement" dwellings; and endless streets of houses let in "apartments" to clerks, respectable workmen, journalists and students.

The aristocrats of St. Pancras take little interest in Borough matters; as is also the case with the slum dwellers. The local shop-keepers and merchants, the professional men and the respectable working class, take a keen interest, but many of the latter cannot vote through working too far from their homes to get back in time. Many of the "City's" business men, merely residing in the borough, now begin to take a part in local politics. They are mainly Conservatives in imperial politics, but a large proportion are "Progressives" locally. This helps to account for the political constitution of the borough Council.

The Councillors are mainly merchants, shop-keepers and professional men; or small employers of labor. Mr. Idris, the famous mineral water manufacturer, and his son, are both on the Council; and Mr. Regnart, the Senior Governor of Maples'; also a few "retired" well-to-do business men and persons of independent means. There are also: Doctors, 8; Nonconformist ministers, 4; architects, 1; professional engineers, 1; solicitors, 2; insurance agents, 1; trade union officials, 1; "workingmen," 2. Seven of the members are Justices of the Peace, including the Mayor and the Deputy-Lieutenant of the County. Several of the members hold other public offices. One is in Parliament; three are on the London County Council; one on the Metropolitan Asylums Board, and one on the Water Board. Most of these are men of "independent means" who devote all their time to public service.

There are five labor members, who are the nominees of the local "Labor Representation Committee," on which the trade unions are mostly represented. Their election expenses are paid by the committee, but they do not receive any remuneration for their services. They consist of one trade-union official (plasterers), one insurance agent; one working electrical engineer, one non-conformist minister, and one railway guard. In the actual work of borough administration "party" divisions are not considered, and all sections work together. One of the labor men has been made an Alderman.

The majority of Councillors live in or near the wards they represent, or have business interests there. This is possible because nearly every ward has a well-to-do quarter.

St. Pancras might be taken as typical of a large number of the London boroughs, except that it abuts on Regent's Park and Hampstead Heath, which gives it an exceptional number of very wealthy residents, compared with most London boroughs.

*Glasgow.* The Corporation of Glasgow includes 78 Councillors and Aldermen, who represent 26 wards, to which are added two representatives of ancient guilds surviving within the city. Of the 78 ward representatives, 27 live in the wards they represent and 51 outside.

The 14 working-class wards have 12 members living in and 30 members living outside the ward they represent, while 6 residential wards are represented by 13 members living in their wards and only 5 outside. Five members are considered in Glasgow as men of wealth, while 50 are moderately wealthy or fairly well-to-do. Practically all these have acquired their wealth by their own efforts, although five have added to moderate amounts inherited.

The fact that such large proportions of the Municipal Councillors are not residents of the wards they represent attracts scarcely any attention among the voters. All of our inquiries on this subject show that the question of a candidate's residence never comes up in an election. Occasionally it is stated that a resident would be preferred if there were such a one well qualified, and a few labor Councillors have declared that owing to the predominance of members living in residential wards those wards are disproportionately cared for in the way of parks and improvements. These labor councillors, who are themselves also usually non-residents, are inclined to make sure of the local needs, and in two cases we have learned where they have adopted the plan of calling together the voters two or three times a year to report on what the Council has done and to discuss the needs of the ward. This policy is an innovation. In general, the view seems to be held by the voters that the Councillor is elected to represent the interests of the city as a whole, although a few have stated that a prominent man who is a non-resident does more for the ward than a less influential man who is a resident.

Perhaps one reason why the voters, especially those of the working-class wards, do not insist on residency of their Councillors is the lack of jobs or offices at the disposal of the Councillor. This is inferred from the fact that a Councillor living in and representing his working-class ward receives many fold more applicants for letters of recommendation to officials than others not living in their wards.

**Committees.**

The foregoing description of the Councils applies with even greater significance to the committees of the Council, especially those committees in charge of the great productive enterprises. Thus the Tramways Committee of Liverpool consists of 18 members, but only two of these live in the wards which they represent; and of the 16 who live outside their wards 7 live in the suburbs and 5 in the aristocratic wards. Eleven members of this committee represent working-class wards, yet there is but one of this number who lives in the ward he represents.

The Committee on Electric Power and Lighting of Liverpool has 16 members, of whom 7 live in the wards they represent, each of these wards being at the same time the residential wards. Nine members live outside their wards, and of these there are 5 who live in the suburbs. All of the members from the five labor wards represented on this committee live outside those wards, either in the suburbs or in the residental wards.

*Birmingham.* The committees of the Birmingham Council are smaller in the number of members than the committees of other Councils, the Gas Committee numbering but eight. Of the members of this committee, but a single one lives in the ward he represents; in fact six of the members live outside of the corporate limits, in the aristocratic suburb of Edgbaston, and but two of the members live in the city. At the same time every one of the eight members represents a strictly working-class ward. This makes it possible to have a committee of the following qualifications:

1. A chairman who is also chairman of the Birmingham Small Arms Company, Limited, one of the largest commercial undertakings in the city. He is also a director of a local bank, is on the board of several other companies and a manufacturer of metal goods; has been a member of the Gas committee thirteen years, having already served as chairman of the Works sub-committee and the Finance sub-committee. Lives in the suburbs.

2. An Alderman who was for many years a successful manufacturer in the city, and engaged in the iron and coal trades, but now retired from business; member of the Gas committee twenty-eight years, chairman three years, and chairman of the Works sub-committee. Lives in the suburbs.

3. An Alderman who is a retired chemical manufacturer; has served on the committee five years and lives in the suburbs.

4. An Alderman who is on the directorate of one of the largest iron and steel tube firms of Great Britain; a member of the committee fifteen years and chairman three years; lives in the suburbs.

5. A Councillor who is a successful glass manufacturer; has been on the committee ten years.

6. A Councillor who is a leading surgeon of the city; has been on the committee four years; lives in the suburbs.

7. A Councillor who is Secretary of the Tin Plate Workers' trade union; has been on the committee sixteen years, and lives in the suburbs.

8. A Councillor who is an operative brassfounder, and has been on the committee five years.

*Glasgow.* A standing order of the Corporation of Glasgow requires that 9 of its 24 committees shall be "ward committees;" that is, they shall consist of 26 elected members, one selected from the representatives of each ward. Among the committees thus constituted are those on Tramways, Gas and Electricity. Taking these three committees, notwithstanding the policy of making them representative of all the wards, 21 members of the Tramways committee live outside the wards they represent, 14 of the Gas committee and 17 of the Electricity committee. Of the representatives from the 14 strictly working-class wards, 12 on the Tramways committee live outside their wards, including the chairman, 9 on the Gas committee, and 12 on the Electricity committee.

The Tramways committee of Glasgow has 6 manufacturers and employers, 12 merchants, and one each as follows: Accountant, newspaper proprietor, banker, retired proprietor, retired police superintendent, co-operator, labor secretary and publican. The Gas committee has 11 manufacturers and employers, 11 merchants, 2 physicians, 1 accountant and 1 engineer. The Electrical committee has 15 manufacturers and employers, 5 merchants, 2 accountants, 2 publicans, 1 solicitor and 1 engineer.

The Manchester Gas committee has 8 manufacturers and employers of labor, 5 merchants, 3 "gentlemen," 2 pawnbrokers and one trade union secretary. The members have served on the committee from one to twenty-eight years, and a majority has served nine years or more. The Electricity committee has five manufacturers, including 1 brewer, 1 merchant, 3 engineers, 1 chemist, 1 architect, 1 real estate agent, 1 pawnbroker, 1 bath house proprietor, 1 lawyer and 2 "gentlemen."

The Leicester Gas and Electric Lighting committee of 16 members includes 6 manufacturers, 4 merchants, 2 shoe factors, 1 trade union official, 1 co-operator official, 1 publican and 1 civil servant. Their terms of service range from one year to twenty years as shown by the table, and the chairman has held that position for four years after serving on the committee eight years.

The following table shows the length of service on the several committees, as far as ascertained. In several cases members have served in the Council one or more years before their appointment on these committees. In the case of Glasgow the figures indicate the period of service in the Council, although their service on the committees has been practically for the same period:

YEARS OF SERVICE ON COMMITTEES.

| | Glasgow. | | | Manchester. | | Birmingham. | Leicester. |
|---|---|---|---|---|---|---|---|
| | Gas. | Elec. | Tram. | Gas. | Elec. | Gas. | Gas. |
| 1 | 3 | 3 | 3 | 3 | 6 | .. | 1 |
| 2 | 4 | 2 | 3 | .. | 4 | .. | .. |
| 3 | 3 | 3 | 1 | 2 | .. | .. | 1 |
| 4 | 3 | 3 | 2 | 1 | 2 | 1 | .. |
| 5 | 3 | 2 | 1 | .. | 2 | 2 | .. |
| 6 | 2 | 3 | 4 | 1 | 2 | .. | 1 |
| 7 | .. | 1 | .. | 1 | .. | .. | .. |
| 8 | .. | .. | 1 | 1 | .. | .. | 3 |
| 9 | .. | .. | 1 | 4 | 2 | .. | 1 |
| 10 | 1 | 1 | 1 | .. | .. | 1 | 2 |
| 11 | 1 | 1 | .. | .. | .. | .. | .. |
| 12 | 1 | 1 | .. | .. | .. | .. | 2 |
| 13 | .. | 1 | 2 | .. | .. | 1 | .. |
| 14 | 1 | .. | 1 | .. | .. | .. | 1 |
| 15 | 1 | 3 | 3 | 1 | .. | 1 | .. |
| 16 | .. | .. | .. | 2 | .. | 1 | .. |
| 17 | .. | .. | .. | .. | .. | .. | .. |
| 18 | 1 | 1 | .. | .. | .. | .. | .. |
| 19 | .. | .. | .. | .. | .. | .. | .. |
| 20 | .. | 1 | 1 | .. | .. | .. | 4 |
| 21–24 | 1 | .. | 2 | 2 | .. | .. | .. |
| 25–28 | 1 | .. | 2 | 1 | .. | 1 | .. |
| | 26 | 26 | 26 | 19 | 18 | 8 | 16 |

*National Politics.* Outside Glasgow and London the nomination and selection of members of the Council and of the committees of the Council are controlled by the local committees of the three national parties—Conservative, Liberal and Labor. That is, the Councils are elected on political lines. In Glasgow national politics is said to cut no figure whatever, while in London the two local parties, Progressives and Moderates (now the Municipal Reformers), are not identical with the National Liberal and Tory parties. The Progressives include Liberals, Laborites and several Conservatives, while the Moderates include Conservatives and Liberals.

The situation in Leicester is described as follows by one of the Aldermen: The town is overwhelmingly Liberal, and the Liberal organization is based on ward committees, each of which nominates its own candidate for the Council. The Labor and Conservative parties, not being so strongly represented, rely on their central organizations to name candidates for the several wards and to conduct the campaigns. In Liverpool the ward committees for each party are selected by the Parliamentary committee, which usually includes two or three wards. A central committee of delegates from the Parliamentary committees determines the party policy and conducts campaigns.

The committees of the Leicester Council are elected anew by the Council after each election. Each member of the Council designates to the Town Clerk the three or four committees on which he wishes to serve, and these self-nominations are laid before all the members. A few days before the legal selection of committees the

Council holds a "private" meeting—that is, something like a Committee of the Whole—and by ballot designates the membership of the several committees. But prior to this "private" meeting the Liberal members hold a caucus and make up their slate, and this slate is carried through at the private meeting and at the legal meeting. Members not elected on leading committees are placed on minor ones, such as museums, etc. The labor men are usually distributed among the large employing committees, but they are of course a small minority of one or two. Conservatives are also distributed among the committees. It is stated in Leicester, as well as in the other English cities, that once elected and appointed on the committees politics receives no further consideration whatever. The different party men work together solely for good administration. This contention seems to be borne out by several facts, the most significant being the election of Aldermen. Since Aldermen are elected by the Council, and not by wards, the Councils occasionally elect Aldermen of the opposite party who have been defeated or could not have been elected in the wards. Thus in Leicester, with 42 Liberals and 11 Tories in the Council, the chairman of the Finance committee is a Tory elected as Alderman by a Liberal Council and then placed at the head of that committee on account of his recognized financial standing and ability.

The same thing occurs in Birmingham, where the chairman of the Finance committee and the chairman of the Health committee are Gladstonian Liberals, both elected to the positions of Aldermen and chairmen of these important committees by a Tory Council. Altogether 5 of the 18 Aldermen in Birmingham are Liberals, while 40 of the 54 Councillors elected by wards are Tories and Unionists.

### Citizens' Associations.

An interesting institution in Glasgow is that of the ward committees. These are purely voluntary, non-political associations, not recognized in law, but they have existed in each ward for many years. They had somewhat fallen into abeyance until the Citizens' Union some eight years since set about strengthening them and endeavoring to utilize them against the policy of further municipalization. These ward committees are elected by show of hands at a ward meeting of the electors in the ward. At a conference of ward committees held in December, 1905, it was recommended that one-third of each committee who have been longest in office shall retire annually. These committees take up all matters of interest to the ward, such as improvements, street widening, sanitation, tramway, gas and electric service and supply. They adopt resolutions and address identical letters to the three Councillors and the Bailie representing the ward. It would seem that these committees fulfill a purpose, in view of the non-residence of the ward councillors, in keeping before them the needs of their localities.

We have not learned that there are similar committees in any of the other cities which we have visited. Their place is taken in

English cities by the ward committees of the political parties, and these appear only at election time.

There is, however, another class of associations which has arisen in recent years as a means of opposition to the policy of municipalization. These are the "rate-payers'" associations. In Glasgow are two branches of this form of organization named the Rate Payers' Federation and the Citizens' Union. They are composed mainly of the same individuals, with offices in common, but with separate secretaries. Their only difference is that the Citizens' Union was organized to combat municipalization through politics and agitation and the Rate Payers' Federation was organized to oppose the policy in Parliament and the courts. The membership of the Rate Payers' Federation is kept secret, but it is incorporated and employs legal and other talent as needed.

The policy of these associations as stated by their secretaries has not been to oppose the municipalization of tramways, gas, electric, or water supply—indeed they have no criticisms to make on the administration of these enterprises in Glasgow "when confined to their proper spheres." At the time when the Citizens' Union was organized, in 1898, the Socialist program was in full swing, and propositions were seriously considered by the Council of extending municipal ownership to housing, banking, insurance, cemeteries, tailoring, baking, and so on. It was these extensions that the Union was organized to combat. It also opposed the gas and electric undertakings in their plan of enlarging their field to take in the supply of gas and electric fittings, and was successful in the case of electric fittings, but it came too late in the field to prevent driving the private traders out of the supply of gas fittings. On this account electric fittings continue to be supplied in Glasgow by about one hundred and twenty private traders, and the municipal electricity department is confined to the field of electric supply. The Union also opposed the extension of the tramway system to the suburbs until such time as the shortage of facilities within the boundaries of the city itself was overcome. This shortage, it is said, has now been made good, and several suburban extensions have been made, but in the case of one proposed extension, that to Milneygh, the Rate Payers' Federation secured an injunction which, up to the present time, has prevented its construction. The Citizens' Union has also opposed the Tramways Committee in its efforts to keep heavy traffic off the tracks to the detriment of horses and business traffic.

The Citizens' Union has taken an active part in resuscitating the ward committees in Glasgow and arousing the interest of the citizens in the management of the municipality. It publishes a year book for the use of citizens and the encouragement of ward committees, and it states that the alarming indifference to municipal affairs which its members found in 1898, and which was taken advantage of by the Socialists, has now been displaced by an intelligent, active, and widespread interest.

Following is the program of the Citizens' Union, as printed in its Year Book, 1906:

The Citizens' Union approves of—

1. Economy and the reduction of taxation.
2. Limitation of the city debt in proportion to the assessable rental.
3. Appointment of Public Auditors by the Secretary for Scotland.
4. Organization of corporation departments so as to avoid overlapping and promote co-operation.
5. Appointment of Stipendiary Magistrates.
6. Compliance with the 1897 Act, which limits corporation housing to the poorest classes.
7. Corporation encouragement of private enterprise to provide houses for the laboring classes.
8. All further borrowing and capital expenditure on telephones to be stopped and the enterprise sold.
9. A legal Register of streets, in terms of the decision of the seven Scotch Judges, and abandonment of the House of Lords Appeal.
10. Intoxicated persons in the streets to be taken charge of by the police.
11. Better administration of licensing laws, and reduction of licenses in crowded areas.
12. Valuation by an outside valuator of the City Improvement Trust Property.
13. Reduction of the large amount held by the city on loan at short notice.
14. The recommendations of the Housing Commission as to housing and controlling the poorest classes.
15. Extension of the municipal franchise to limited companies, and of the school board franchise to large firms and limited companies who are heavy rate-payers.

The Citizens' Union is opposed to—

1. Municipal Socialism and municipal trading, unless where some interest common to all the citizens is concerned.
2. The corporation continuing to hold lands and buildings after it has cleared an insanitary area, or completed an improvement.
3. A Municipal Works Department.
4. The proposed illegal register of streets.
5. Municipal cemeteries, while the wants of the City are adequately met by private enterprise.
6. Municipal insurance, while there is healthy competition for corporation business.
7. Including rates in rents under £6, which would enfranchise 10,000 persons who do not at present pay rates.

The Union cannot expect candidates to adopt all the above items, but it is believed that they will serve a useful purpose in letting all whom it may concern know what are our general principles.

Outside Glasgow we have not been able to secure information direct from the officers of ratepayers' associations. The only one that seems to have been aggressive is the London Municipal Society, with such names as the Duke of Norfolk and Lord Avebury (Sir John Lubbock). The specific objects of this society are among others, a uniform system of municipal accounts, an audit by qualified and independent auditors, the principle of public control of large communal services as opposed to municipal management, revision of the system of compounding for rates, and the reform of local taxation. In London there are also ratepayers' associations in the several boroughs.

A leading Alderman and former Lord Mayor of Birmingham, who was himself strongly opposed to the municipalization of the tramways, says that the Ratepayers' Association of Birmingham has been of no practical use to them in the conduct of municipal affairs, because their view is limited to the one object of keeping down rates.

## MUNICIPAL EMPLOYMENT.

### Glasgow.

In all of the municipal undertakings examined the corporation delegates the control to standing committees. These committees vary in the number of members from eight, in the case of the Gas Committee of Birmingham, to twenty-six in the case of Gas, Tramways and Electricity in Glasgow. This figure is reached in Glasgow in order to give a member to each ward. The committees are usually divided into sub-committees. The Tramways Committee of Glasgow has a sub-committee on Finance and another on Stores. The Gas Committee has sub-committees on "Finance," "Works," "Accounts," "Contracts," "Applications for Pecuniary Allowances," and "Hire and Sale of Gas Stoves." The quorum is usually a very small proportion of the membership; *e. g.*, seven of the above Glasgow committees and three of the sub-committees. The actual work of a committee is practically carried on by the chairman (or "convener" in Glasgow) assisted by the chairmen of the sub-committees. The sub-committees cannot act except as approved by the parent committee, and "all findings of committees must be submitted to the whole Council for approval, unless the Council has remitted the question to the committee with powers." (Glasgow.) The chairmen of the committee and the sub-committees are elected by the Council (Glasgow). They receive no compensation whatever. The committees meet regularly every two weeks, so that their minutes come before the Council every two weeks.

The General Manager, or chief executive officer, of a department is elected by the Council, but the selection and nomination is made by the committee. The following from the minutes of the Tramways Committee is the contract under which the present manager, Mr. James Dalrymple, is employed.

*Excerpt from Minute Date 7th December*, 1904.

The Sub-Committee further agreed that the appointment should be subject to the following terms and conditions: (1) The appointment shall be held during the pleasure of the Corporation; (2) The General Manager shall devote his whole time to the duties of the office; (3) The General Manager under the direction and subject to the control of the Corporation, shall have the full management of the Tramways Department; (4) The General Manager shall appoint and control the entire staff, and shall have power to suspend or dismiss any person employed under him, and shall be responsible to the Corporation for the good conduct of the persons appointed by him and generally for the efficiency of the department under his management: provided always that before appointing or dismissing the head of any of the departments under him he shall submit the name of such person to, and obtain the sanction of,

the Tramways Committee; (5) The General Manager shall in such way and manner as the Corporation may direct keep regular and distinct books and accounts showing the whole financial transactions of the Tramways Department, and shall at such time as the Corporation may direct deposit all moneys received by him in bank; and (6) the General Manager shall also at such times as the Corporation may direct submit accounts and statements showing the entire working of the Tramways Department; and shall from time to time make such returns and reports as the Corporation or the Tramways Committee may require.

From this contract, it will be seen that to the General Manager is entrusted the absolute appointment, control, and dismissal of every person in the department, except that of the traffic superintendent, the chief mechanical engineer, and the chief electrical engineer, whose appointment or removal must be confirmed by the committee. With these exceptions, the subordinate service is entirely under the control of the General Manager, and this is the situation in all of the departments in Glasgow and other "corporations" (municipalities). In no case is there a civil service board or commission through which appointments must be made from a list of eligibles, but the manager makes the appointments and removals on his own responsibility.

In the Tramways department of the London County Council all matters of importance in connection with the acquisition, construction, and operation of the tramways are settled by the Council itself. The Highways Committee of the Council, who consider and report on all tramway matters, meet and report to the Council each week. The Council has delegated certain powers to the Committee of a routine character relating principally to details in connection with the working of the undertaking. The following is a copy of the resolution of the Council under which the Highways Committee act in this respect:

"That, as regards the London County Council Tramways (*i. e.*, the undertaking transferred to the Council by the London Tramways Company), the Highways Committee be authorized until further order—(*a*) to purchase horses and stores and other articles required, and to enter into contracts and to order the seal of the Council to be affixed thereto; (*b*) to act generally on behalf of the Council in all matters regarding the undertaking; and (*c*) to incur such expenditure as may be necessary in connection with the maintenance and working of the undertaking, notwithstanding the conditions contained in the Council's Standing Order No. 254 relative to estimates of expenditure; and that the Committee do report to the Council from time to time what has been done under this authority."

The Highways Committee consists of not less than twelve and not more than fifteen members, apart from ex-officio members, and is constituted afresh by the Council in March of each year. The Highways Committee has appointed two standing sub-committees who consider and report to the committee on prescribed division of tramways work. As regards the appointment and dismissal of staff the Council itself decides as to the employment and dismissal of all officials on the permanent staff, although they are subordinate to the chief officer. As regards the men engaged in the actual operation of the lines, however, the Council has passed

a resolution, as follows, which gives certain powers to the Chief Officer of Tramways in this respect:

"That the manager of the London County Council Tramways shall, until further order, have control of the staff exclusively employed in connection with the working, maintenance, repair and reconstruction of the tramways, and with the maintenance, repair and construction of the cars, omnibuses and other vehicles used in or in connection with the tramways; and he shall, except as regards officials appointed by the Council, have power to appoint and to dismiss any person under him, and shall be responsible to the Council for the conduct of the entire staff, and generally for the efficient working of the tramways and undertaking under his charge."

Rates of pay for all classes of the tramways staff are fixed by the Council itself, which also determines all questions of a general character relating to the conditions of service of all the employees in the tramways department.

The question as to whether the General Managers actually exercise their authority on their own responsibility or are influenced in making appointments by pressure from outside, and especially by pressure on the part of Councillors and committeemen, has arisen, especially in the case of the three undertakings in Glasgow and the Gas Department in Leicester. In these cases our inquiry into the facts has been made as complete as was possible in the time at our disposal.

The matter came up in a meeting of the Glasgow Corporation September 4, 1902, in reference to the appointment of relatives of officials, as will be seen from the following official report of the proceedings:

*Corporation, 4th September*, 1902.

Return of employees who are relatives of Councillors and officials.—Motion by Councillor Gibson.

Councillor Gibson, in pursuance of notice given by him on 7th ultimo, moved: "That a complete return of the number of relatives of members of this Council and the relatives of officials presently employed by the Corporation be placed beofre this Council. This list to include names of said members of Council and officials, together with the names of their relatives and the department in which they are employed." Councillor O'Hare seconded the motion.

Amendment by Councillor Wm. Martin.

Councillor William Martin, seconded by Councillor McCutcheon, moved the previous question as an amendment.

Discussion.—Vote taken.—Amendment carried.

After discussion, a vote was taken, by a show of hands, as between the motion and amendment, when fifteen members voted for the motion and eighteen for the amendment. The amendment was thereupon declared to be carried.

The following is the substance of the discussion on the foregoing motion, taken from the Glasgow Herald of September 5, 1902.

Councillor Gibson said: "With a few exceptions, members of the Council were in the habit of finding comfortable, easy, well-paid berths for their own relatives, . . . In the Baths Committee this state of matters prevailed to an alarming extent, and

it also existed in the Tramways Committee, the Electricity Department, and the Gas Department." Mr. O'Hare "had had complaints from the heads of departments as to the difficult position in which they were placed on this account." Mr. Martin maintained, "that unless in certain circles known to Mr. Scott Gibson there was not the least discontent or dissatisfaction, and if they agreed to such a motion they would be doing their best to destroy confidence in the Corporation. He had no doubt that such a return as Mr. Gibson desired would show that there were a good many relatives of officials, but they had trusted heads, who were responsible for the administration of the departments, and he did not think that because certain members of the staff were related there was any ground for inquiry."

Nothing further relating to this matter was considered by the Council until two years later, September, 1904. At that time the attention of Councillors was called to the appointment by the head of the meter-testing branch of the works of his son in a subordinate position. This son had neglected his work through dissipation, and his fellows made complaint unofficially to the Councillors over the head of their chief. The meter-testing branch is subordinate to the "Watching and Lighting Committee," and has no connection with the Gas Department. It has a small force of five men. On investigation the Committee dismissed its head, and he has not been employed by the Corporation in any capacity since that time.

Following this action the Council took up the matter and adopted a resolution, which appears as "No. XLV. Employment of Relatives," in the "Standing Orders of the Corporation of the City of Glasgow." The official report of the proceedings, and the form of the resolution are as follows:

*Corporation, 15th September, 1904.*

**Employment of officials' relatives in Corporation Service.—Motion by Bailie O'Hare.**

**Bailie O'Hare, in terms of notice given by him on 17th September, 1903, moved: "That no manager, superintendent, foreman, or other official employed under this Corporation shall employ or continue to employ any relative in the department over which he has charge unless he has, previous to granting such employment, had the sanction of the committee in charge of such department." Councillor Kennedy seconded the motion.**

**Amendment by Councillor Steven.**

**Councillor Steven, seconded by Councillor Wallace, moved, as an amendment, that the terms of the said motion should be altered so as not to make it retrospective.**

**Discussion, vote taken, and motion carried.**

**After discussion, a vote was taken, by a show of hands, between the motion and the amendment, when the motion was declared to be carried—seven members voting for the amendment.**

At the time when this resolution was adopted the Gas Department took a census of all of its employees, and it was found that there were twenty relatives of managers and foremen in the

department of 2,500 employees. This census, with the names of relatives and managers, was laid before the Gas Committee, which immediately sanctioned their employment without question. There was no relative of any Councillor in the department, nor is there at the present time. The Tramways Committee also made a careful inquiry throughout the department, and did not find an instance of a foreman or official having taken on a relative.

A broader aspect of this matter came up in a meeting of the Council April 5, 1906. The Labor members of the Council had in 1896 secured the establishment of a municipal Labor Bureau for the purpose of finding work for the unemployed. Ten years had shown that the bureau was practically a failure, both in the small number of unemployed who registered and the small percentage for whom work was found. In 1905 the number registered was 5,678, and the number who found work was 1,941, or 34 per cent. Of these, only 310 places were found for men and 1,631 for women, mainly as domestic servants. The number who obtained work with private employers was 1,903, including 1,631 women, and the number who found work with public authorities was only 38. The largest number who had been employed by public authorities was 183, in the year 1898, and this number had fallen off to 38 in 1905. In view of this evident refusal of managers of municipal departments to employ men recommended by the bureau, the Labor members introduced and supported a resolution: "That the heads of the several departments of the Corporation in future only take into the service of their departments persons who have applied through the Corporation Labor Bureau."

The resolution was debated, but was defeated by a vote of 22 to 13.

In supporting the resolution the Labor members made statements in effect as follows:

"It is the impression that in Glasgow there is no chance to get employment in the municipal departments without the recommendation of a town Councillor. This is the painful experience of a Councillor" (Battersby).

"The Labor Bureau was established for the express purpose of extending aid to those seeking employment, but not one hundred are placed through the Bureau. This notorious fact of ignoring the Labor Bureau offends the sense of justice in the outside mind" (Stewart, P. G).

"The friends of foremen and officials get a preference. . . . Promotion comes in some cases from outside influence while the lads in the offices are not promoted. . . . Preference is given in the appointments to clerical positions of graduates of a certain commercial school" (Forsyth).

In view of these statements inquiry was made of each of the Labor members as to the facts to which they referred. Following is the substance of their replies:

"Of course, I was standing for the Labor Bureau, and we have to make strong statements to get what we want" (Battersby).

"The impression does prevail among workmen that a man cannot get a job without influence, but the impression is preposterous. There is no truth in it" (Stewart).

"The principal critics who are in the habit of making these declarations of favoritism are themselves men who have been applicants and

either disqualified on the ground of incompetency or lack of character. These men frequently turn up at municipal elections and make themselves prominent against Councillors who have declined to aid them. Councillors write these lines to managers of departments, but they are to be looked upon as an introduction and not a recommendation. They merely secure an interview" (Forsyth, Stewart, Battersby).

"It was not as a cure for an evil that I introduced the resolution but as a prevention. I would stop these lines altogether, because they may lead to abuse. . . . I do not follow up these cases unless they are very necessitous, and then I sometimes call upon the manager personally. . . . It is not the chairman or conveners of committees that send lines—they do not use their influence in this direction." "The lines are not sent on behalf of mechanics or tradesmen, but mainly for common laborers. . . . Other cases where this influence is found is that on behalf of Irishmen and non-residents who get preferences over rate-payers, through Irish members of the Council. A prominent Orangeman in my district has been able to get lines from several Councillors on behalf of his friends. . . . I have known cases where a man made application, was refused, but afterwards received a line from a Councillor, and got appointed" (Forsyth).

"Of the 15,000 men in municipal employment the number engaged having lines from Councillors cannot exceed 2,000 at the outside. The superintendents have the sole power of taking on and discharging all employees, and that they exercise that power there is not the slightest doubt. Fifteen years ago when I entered the Council nobody could get into the municipal service without influence, but with the increase in the size of the Council, with the exposure of this and other practices, and with the influence of the Labor Councillors, this has greatly decreased, and is now continually diminishing" (Battersby). . . . "No doubt there is a certain justification on the part of superintendents in refusing to take men from the Labor Bureau, because the better class of workmen do not patronize that Bureau—they consider that it places them in poor company—and those who are trade-unionists have their own 'house of call' where they register when out of work" (Battersby, Stewart, Forsyth).

"Our main object was to induce all the unemployed, and, especially the respectable unemployed to register at the Labor Bureau, and thus to be able to know the state of the labor market, since the capitalist members of the Council denied that there was any serious lack of employment. We considered that if the municipal departments were compelled to select their employees through the Labor Bureau, then the unemployed would go to the Bureau" (Stewart).

Inquiry among other members of the Council and among the heads of departments confirms the statement that workmen are continually appealing to Councillors for cards or "lines" of recommendation. New Councillors sometimes have as many as five to ten applicants a day. They ask that the Councillor "send a line" to so-and-so, head of such-and-such department. The "lines" sent are usually simply the Councillor's card with "To introduce," and the name of the applicant on the back. Another one reads: "Dear Sir,—The bearer is trustworthy, reliable man. If you have an opening in your department will you kindly give him a start?" Several Councillors, in addition to sending "lines," have come many times to managers and have pressed them to take men on. Councillors and managers say that they would be glad to be rid of these importunities, but they look upon them more as a nuisance than an evil. One chairman said to his manager, when the latter was appointed, "I shall doubtless send you many cards,

but pay no attention to them." Others advise their managers that the cards are merely to be looked upon as an introduction. The convener of the Tramways Committee, Mr. Hugh Alexander, a large manufacturer and employer of labor, was first elected to the Council on this very issue. A certain Councillor, Cronin, who posed as a "labor man," had boasted in public that he had found some forty-seven places in the tramways department for his friends, and he promised the municipal employees generally that he would remedy their grievances. He had been sitting for that ward for several years, but Mr. Alexander attacked him and appealed to the voters on the ground that a man of such influence was corrupting and a menace to efficient management of the department. Alexander was successful by a good majority. He brought up the claims of Cronin at the first meeting of the Council and satisfied himself that Cronin's boast was unfounded and that he had not secured positions for anybody. He was afterwards made chairman of the Tramways Committee. This election has done much to educate the public and to strengthen the hands of Councillors and managers against yielding to the importunities of applicants. Extensive inquiries among both the friends and opponents of municipalization in Glasgow indicate that Cronin's is the only case of a Councillor who has made boasts or promises of this kind.

At the same time, Councillors would like to be relieved of the pressure of applicants, and they state that if the resolution regarding the Labor Bureau had not been made compulsory upon the managers, but had been limited to requiring Councillors to refer applicants to the Labor Bureau, it might have been adopted. The issue, however, was evidently confused by the attempt of the Labor members to convert what is really an ordinary private employment bureau into both a private bureau and a civil service commission. The combination was impossible, because, as is agreed by all, the great majority of registrations at the bureau were those of relatively inefficient, often weak and underfed and almost unemployable laborers. The managers of departments were able to make it plain to Councillors that they could not consent to be limited in their choice of employees to the applicants who came through such an agency. And no proposition was made or even imagined of instituting a civil service commission. Such a measure was not considered because it was recognized that the conditions of municipal employment have greatly improved during the past twenty years, and managers are given greater freedom and responsibility. The reasons for this improvement are the greater publicity and public interest, and the exposures of even the slightest indiscretions in the management of departments, such as those above mentioned. Twenty years ago a Convener would have thought nothing of recommending old and inefficient men to easy positions, such as lamplighting, cleaning, watching, etc., but since the Labor Councillors have secured the minimum wage resolution of twenty-one shillings for municipal employees that form of pensioning worn-out employees of private firms has been stopped. The quasi-pensioners of

the present time are those who have grown old in the department and are transferred to lighter work. Of these there is a considerable number in the gas department, but not many in the other younger departments.

Besides Councillors and managers, several subordinate managers who have the immediate supervision of employees were interviewed and the methods and records of appointments, promotions and dismissal were examined. The policy of Glasgow in the case of chief and superior officials is to promote or transfer its own men rather than advertise for applicants. This policy has critics among those Councillors who believe that the positions should be advertised. The issue was drawn especially at the appointments of Mr. John Young and Mr. James Dalrymple as managers of the tramways department. Mr. Young had been for several years manager of the cleansing department, and had brought it to a high state of efficiency, introducing many new features and greatly enlarging its scope. Certain members of the Council contended that the chief of the new tramways department should be an electrical engineer, which Mr. Young was not, and advertised for from the outside, but they were overruled. Mr. Young on taking with him to the tramways several of his subordinates from the cleaning department, criticism was made that they were his friends and relatives. It was shown that they were not relatives, though they may have been friends. One of his assistants was Mr. Dalrymple, a chartered accountant, who had been in the Chamberlain's and Registrar's departments for thirteen years. Mr. Dalrymple was made assistant manager, and when Mr. Young left Glasgow to accept a position with the Yerkes underground road in London on a much greater salary objection was made to the promotion of Mr. Dalrymple that he also was not an electrical engineer, and it was again urged that the position should be advertised. A similar policy of promotion, rather than advertisement, was followed in the appointment of the present managers of both the Gas and Electricity Departments. In these cases, however, the appointees were technical engineers. Mr. Wilson had been with the Gas Light and Coke Company of London thirteen years, and was resident manager of the Dawsholm station in Glasgow for thirteen years when he was promoted to his present position. Mr. Lackie, Chief of the Electrical Department, had been manager of one of the stations, and when the former chief accepted a position with a private company, objection was made to Mr. Lackie's appointment on the ground of his youth and inexperience, but the advocates of promotion carried their point over the advocates of advertisement.

A useful publication of the Glasgow corporation, established in 1898, is the "Annual Return of Officials and Salaries," showing names, periods of service, salaries, and dates and amount of last increase. From this return the following table is compiled, showing the period of service of the leading officials in the three undertakings investigated. It demonstrates clearly the results of the policy of promotion and transfer.

*Period of Service, Officials Having Salaries £200 and Over—Glasgow, 1906.*

| *Gas.* | *Years.* | *Tramways.* | *Years.* | *Electricity.* | *Years.* |
|---|---|---|---|---|---|
| General Manager | 16 | [2]General Manager | 25 | Chief Engineer | 14 |
| [1]Treasurer | 37 | Traffic Superintendent | 19 | Assistant Engineer | 7 |
| [1]Surveyor | 37 | Chief Engineer | 8 | Chief Clerk | 32 |
| [1]Surveyor | 37 | Electrical Engineer | 6 | Chief Draughtsman | 8 |
| Clerk, engineers' office | 36 | Outdoor Traffic Superintendent. | 18 | Mains Superintendent | 7 |
| Assistant Manager | 7 | Secretary | 16 | | |
| Chief Draughtsman | 7 | Accountant | 15 | | |
| Station Manager | 36 | Cashier | 12 | | |
| Station Manager | 14 | Purchasing Clerk | 12 | | |
| Station Manager | 19 | Claims Superintendent | 3 | | |
| Station Manager | 18 | Civil Engineer | 6 | | |
| Station Clerk | 29 | Civil Engineer | 6 | | |
| Station Clerk | 22 | Chief Draughtsman | 12 | | |
| Superintendent Street Mains | 14 | Manager Car Works | 7 | | |
| Superintendent Gas Fitting | 2 | Stores Superintendent | 28 | | |
| | | Permanent Way Superintendent | 15 | | |
| | | Superintendent Power Station | 5 | | |
| | | Superintendent Sub-station | 5 | | |

[1] Previously with private companies taken over.
[2] Previously in the Chamberlain's and Registrar's Departments.

This policy of promotion is followed in all of the departments. It is not governed by any rule or standing order of the Council, and there is no rule of seniority, but the promotions, like the original appointments, are made on the authority and responsibility of the General Manager. The Labor member of the Council who had charged that "promotion comes in some cases from outside influence" being asked regarding the matter, said that he had reference to the meter-readers in the gas department, and he considered that they should be appointed by promotion from among the mechanics of the department instead of being selected from outside the department. It turned out, however, that he was not aware of the fact that the meter-readers are appointed by the Gas Treasurer, and not by the Gas Manager, and that the Gas Treasurer, under the Glasgow system, is a co-ordinate official with the Gas Manager, each of them being independent of the other, and, indeed, intended to be a check on the other, and both being responsible directly to the Gas Committee. On this theory the Gas Treasurer appoints his own force, and he looks upon his meter-readers as a part of his clerical force. He might appoint them from among the mechanics if he chose to do so, but such an appointment would be in the nature of a transfer rather than a promotion.

*Clerks.* One of the Labor Councillors made the charge that preference in the appointment of clerks was given to the graduates of a certain commercial school. On inquiry this Councillor stated that in his opinion those positions should be opened to all who have passed the common schools. He was not aware that the actual method of appointment to clerical positions is through advertisement; in fact, these are the only positions that are regularly filled by advertisement. The procedure is to advertise anonymously in a Glasgow newspaper, and then to set an examination for the applicants who appear. Those who stand highest on the examination are appointed. In this way naturally the graduates of the commercial school obtain preference over those who have merely passed the common schools. Recommendations play no part in these appointments except to the extent that the applicant is requested to give the names of former employers, and these are then asked to write a reply to inquiries regarding his character. In the tramways department the chairman of the committee has recommended but one applicant since holding his present position, and that was a lad who was employed as office boy. An examination of the appointments made during the past six months shows that none of the appointees was introduced by members of the Council.

*Tramways—Permanent Way Department.* One difficulty in measuring the extent to which cards from Councillors are influential in getting positions for applicants is the fact that usually the departments do not keep a record of these cards. There is one exception to this statement, namely the permanent way department of the tramways department. The superintendent of this department, under instructions from the General Manager, has kept such a record, beginning September 18, 1905. The object was to enable

the department to keep account of what it was able to do towards solving the problem of the unemployed. Parliament had created "Distress Committees" in Glasgow and throughout Great Britain to deal with this question, and Glasgow had its Labor Bureau for the same purpose. The several municipal departments had agreed to co-operate to the best of their ability, and one method adopted was to carry out during the winter such permanent construction as they could, in advance of the time when they would otherwise perform such work. This was to be done even though it should cost the departments a larger sum than they would be compelled to pay if they waited until the following spring and summer. The tramways department had previously gone to the extent of furnishing the Labor Bureau with blank forms to be filled in when the bureau wished to refer an applicant to the department for employment. Practically all of the applications received were on behalf of common unskilled laborers, and these could be employed only in the permanent way department. Hence this was the only department that has kept the record referred to. An examination of this record for the three and one-half months, September 18 to December 31, 1905, during which time it was possible to carry on this kind of work, shows the following summary: There were 120 applicants with "cards" or "lines" from all sources. Of this number, 47 of the cards were from Councillors, 33 from the Labor Bureau, 13 from the army, and the remainder from private persons, including ministers, priests and charitable agencies. Of the whole number of applicants the superintendent had employed only 25, but of this number there were 22 who had cards from Councillors and only 3 who had cards from the Labor Bureau. In addition to the 25 who had cards of recommendation, the superintendent hired 66 laborers who had no recommendations, a total of 91 common laborers who were put to work during the three and one-half months.

In explanation of these selections the superintendent stated that the men who come with letters or recommendations are at the bottom of the list and are almost unemployable. They do not stay very long, but work two or three days the first week, then perhaps a full week, then drop out. The best men have no recommendations at all, and are simply employed at the gate, on their own application. This statement is corroborated by the fact that none of the twenty-five who had recommendations were employed at the work that required strength or skill, such as the work of the "plate-layer" or the pick-man. They were paid the minimum wages of 5d. per hour, established by order of the Council, whereas the rate of pay for the plate-layer and pick-man, whose work is not really skilled but rather specialized common labor, is 5½d. per hour. The Councillors, according to the superintendent, are more particular than others in recommending men, and he could pick out a few who never send a poor man.

*Tramways—Works Department.* In the works department, where the cars are made and repaired, there are 542 employees. Of the applicants during the past year the foreman believes that about

one in twenty had lines from Councillors. During this time he has taken on but one man—a blacksmith's striker—who had a card from a Councillor, and the Councillor in this case was the Lord Provost. The majority of employees in this department are skilled mechanics, and they secure their positions on personal application. In practically all cases they get notice of a probable vacancy through a friend or fellow-unionist already on the force, and then they apply for the position at once. The changes during 6 months, February and July, 1906, show the men leaving the service to have been 40 artisans, 6 apprentices, and 16 laborers, and the men engaged were 57 artisans, 7 apprentices and 40 laborers, total 62 men leaving and 104 men engaged.

*Car Cleaners.* In the nine car sheds of the tramways department, August 1, 1906, 349 car cleaners were employed. An increase of 54 since January 1 was due to the increased number of top-covered cars. In all 86 men were hired during the six months. Six of them had lines from Councillors and the rest either taken on at the gate or introduced by drivers or conductors. The following table shows the length of service of car-cleaners. The number, 86, who have been employed during the past six months includes the increase of 54, so that the actual number of changes made was 32.

*Length of Service—Car-Cleaners.*

| | | | |
|---|---|---|---|
| Over 5, under 6 years | 37 | 12 years and over | 4 |
| Over 4, under 5 years | 30 | Over 11, under 12 years | 2 |
| Over 3, under 4 years | 22 | Over 10, under 11 years | 2 |
| Over 2, under 3 years | 19 | Over 9, under 10 years | 1 |
| Over 1, under 2 years | 66 | Over 8, under 9 years | 3 |
| Over 6 months, under 1 year | 32 | Over 7, under 8 years | 8 |
| 6 months and under | 86 | Over 6, under 7 years | 37 |
| | | Total | 349 |

*Motormen and Conductors.* The following table shows the length of service of motormen and conductors:

| | *Motormen.* | *Conductors.* | *Total.* |
|---|---|---|---|
| Over 12, under 13 years | 72 | 25 | 97 |
| Over 11, under 12 years | 70 | 37 | 107 |
| Over 10, under 11 years | 38 | 32 | 70 |
| Over 9, under 10 years | 57 | 25 | 82 |
| Over 8, under 9 years | 47 | 26 | 73 |
| Over 7, under 8 years | 91 | 37 | 128 |
| Over 6, under 7 years | 110 | 52 | 162 |
| Over 5, under 6 years | 114 | 67 | 181 |
| Over 4, under 5 years | 115 | 98 | 213 |
| Over 3, under 4 years | 146 | 89 | 235 |
| Over 2, under 3 years | 238 | 108 | 346 |
| Over 1, under 2 years | 95 | 207 | 302 |
| Over 6 months, under 1 year | 3 | 56 | 59 |
| Under 6 months | .... | 378 | 378 |
| Total | 1,196 | 1,237 | 2,433 |

The position of conductor-motorman (all platform men must qualify in both capacities) is filled by appointment on the basis of

an application schedule, a medical officer's certificate, and replies to inquiries addressed to present and former employers covering not less than five years. If the employing officer, the traffic superintendent, on oral interview is satisfied that the applicant will not be suitable for the position, he declines to give him an application schedule. Here is where the influence of the Councillor is first felt. A line from a Councillor will usually secure this much consideration, that the applicant will be furnished with an application schedule, which he is permitted then to fill out. The traffic superintendent states, however, that during the six months ending August, 1906, there have been appointed 378 conductors and that 8 of them presented lines from Councillors. This is a falling off from earlier practice, which he ascribes to the rigid examination which has been adopted. The applicant fills the schedule in his own handwriting, stating his name, address, age, height, weight and whether married or single. He gives his references to present and previous employers, stating the length of service, nature of employment, reason for leaving, date of leaving, and wages, and whether willing to join the Departmental Friendly Society. These employers are then addressed with a "private and confidential" blank schedule, which they are asked to fill in, by answering the following questions:

"How long was applicant in your service?
"In what capacity?
"Reason for leaving?
"Is he of temperate habits?
"Do you know him to be honest?
"Do you know of any reason why applicant should not be employed by us?
"And further remarks?"

Other persons, not employers, referred to by the applicant, are asked similar questions, as follows:

"How long have you known applicant?
"Is he of temperate habits?
"Do you know him to be honest?
"Is he, in your opinion, a suitable man for the position for which he applies?
"Any further remarks?"

The Medical Officer fills in a schedule on the following points:

"Age, height, weight, chest (normal, expanded), general conformation and development, feet, toes, joints, hernia or hydrocele, objectionable scars, varicose veins, skin disease or chronic ulcers, rheumatism, syphilis, condition of heart, of lungs, of blood vessels, urine (specific gravity and albumen). Is applicant physically fitted for employment in the department, and for enrollment as a member of the Glasgow Corporation Tramways Friendly Society?"

An attache in the department examines the applicant and fills out schedule as to sight, hearing and education, the tests being made on colors, distance reading, astigmatism, distance hearing, reading and writing.

The applicant is also required, upon a blank furnished for the purpose, "to write a report upon the given subject, not more than ten or twelve lines in length."

These forms and answers are filed and they constitute the eligible list, from which the appointments are made. After appointment, a detailed "record of service" is kept. The appointment is made at the discretion of the General Manager, and is practically by the hour, for the employee can be dismissed at any time, neither side being bound by a contract.

*Electricity Department.* Applicants for skilled positions in the Electricity Department are required to fill in a schedule as follows:

*Corporation of the City of Glasgow—Electricity Department. Application.*

To be filled up in Applicant's own handwriting.

1. State at full length your Christian and surname and place of residence .....
2. Place of birth.....
3. Date of birth.....and present age.....
4. Height.....
5. State whether single, married, or a widower, and number of children, if any.....
6. Are you a householder and is your house in the City of Glasgow?.....
7. If not, do you reside with relatives?.....
8. Are you active and strong and in the enjoyment of good health?....
9. Are you free from bodily injury or defect, and are your sight and hearing good?.....
10. Have you ever been in business for yourself?.....
11. Were you ever bankrupt or insolvent, or did you ever arrange with creditors?.....
12. Are you security for any person?.....
13. How previously employed?
    From 18..... to 18.....
    18..... to 18.....
    18..... to 19.....
14. References (1).....
    (2).....
    (3).....
15. Can you refer to any one presently employed in the Electricity Department? If so, Whom?.....
16. Can you refer to any one presently employed in any other Corporation Department? If so, Whom?.....
17. Are any of the Referees related to you?.....
18. In the event of being appointed do you agree to further and protect the interests of the Corporation, to devote your whole time to the duties required of you, and engage not to enter into any employment yielding income?.....
19. Nature of situation applied for.....

NOTE—It is a condition of any employment with the Glasgow Corporation Electricity Department that any employee may at any time be dismissed from the service without previous notice or reason given, and the present Application is made in the Applicant's knowledge of this condition.

Signature,.....
Date,.....

During the current year 188 of these applications were filled, and 15 of the applicants were engaged, of whom 5 came with references from Councillors.

The unskilled laborers employed in the mains-laying branch of the Electricity Department are divided into six groups of 250

men when the force is full. Three of the foremen of these gangs have held the position for thirteen years, one for ten years, and two for seven years. Laborers are not hired by the foremen, but by the head of the mains-laying dpartment. During the past year the department has taken on 182 laborers, and while no record is kept of this class of employees, the manager thinks that not more than one-sixth of them had recommendations. This department has not entered into the arrangement referred to above of providing work for the unemployed. The manager is confident that of the one thousand men in his department, nine hundred have entered entirely self-recommended.

*Gas Department.* The managers of the several stations in this department have in times past received a large number of letters from Councillors, as did the present General Manager when he was in charge of one of the stations. Yet he thinks these "lines" do not affect one per cent. of the appointments. No record is kept of recommendations. The lines now come generally to the General Manager, who then sends them to the station managers. The managers are instructed by the General Manager to pay no attention to a recommendation unless the man is quite as suitable as anybody else. The foremen do not employ the workmen,—they are employed only by the General Manager. Each season there are some five hundred applicants for the two to three hundred positions to be filled. The lines from Councillors are effective to the extent that the applicant thus equipped will secure an application schedule, which he is permitted to fill out, whereas a large number without such lines are not given an application schedule. All new employees go first into the yard as laborers, promotions being made to the retort house and the other better paying positions. Old men have not been taken on by this department, although the practice was formerly quite general of finding positions for them as lamplighters under the Watching and Lighting Committee. The minimum wage resolution, as noted previously, has put a stop to this practice. Fully eighty per cent. of the men taken on each year in the Gas Department are old hands who have been laid off in the spring. Men are discharged by the station manager, and they have an appeal to the General Manager. Many of them write to the Town Clerk, and he lays their communications before the Gas Committee, but never during the time of the present manager has the committee entertained an appeal of this kind.

Following is a copy of the application schedule used in the Gas Department for unskilled labor. The name of the person recommending the applicant does not appear unless by way of reference when he has been a former employer:

*Preferences in General.* In the several departments it is the opinion of all those who employ workmen that men with lines from Councillors are not likely to be efficient. They look with suspicion upon such applicants, and they take the ground that competent men do not rely upon influence to get positions. This is true not only

of applicants with lines from Councillors, but also of those having recommendations from others.

There are two forms of preference which are generally given to applicants, other things being equal. One is the preference to married men over unmarried, though this is not stipulated by order of the Council. The other is the preference to ratepayers, provided by the following resolutions of the Council:

*Adopted by the Corporation on 3d February, 1899.*

Councillor O'Hare's motion, of which he gave notice on 14th November last, was agreed to, and the Corporation resolved and ordered in terms thereof: "That this Corporation of the City of Glasgow (Police Department) declare that the ratepayers of Glasgow have a preferential claim for employment under said Corporation (Police Department), and hereby instruct the Manager of each Department to give a preference, other things being equal, to ratepayers applying for employment."

"This motion applies to all the Departments of the Corporation."

It is significant that a leading objection raised by Labor members, in criticising the practice of Councillors' recommendations, was the preference given to outsiders over ratepayers in violation of the spirit of the above resolution. This is true, notwithstanding the managers look upon the cards from Councillors more as a guaranty that the applicant is a Glasgow ratepayer and therefore as an aid to them in carrying out the resolution. In so far as the criticism holds true, it would indicate that Councillors do recommend others besides their political supporters, since it is only ratepayers who have votes. Managers find that young men from Ireland or from the country are of stronger physique and are less dissipated and more reliable than many who are residents and ratepayers, and the fact that they give preference to such men in the face of the resolution of the Council indicates the absence of a political machine or of political influence. This, however, gives rise to another criticism, namely, that foremen, officials, and Councillors bring in their friends from outside the city and get positions for them. Such is the fact to a certain extent, since outsiders naturally look to officials in the departments who have previously come from their neighborhood and have gotten positions and promotions. Whatever may be said in criticism of this practice, it also indicates that in so far local politics and election promises do not control appointments.

On the whole, the field in which "pull" and "influence" are effective in Glasgow in getting position and promotions is personal rather than political in character. The criticisms are all confined to charges of giving preference to friends, relatives, aged and worn-out employees, non-residents from the home neighborhood of Councillors or officials, and destitute or unemployed workmen. The only Councillor who in recent years claimed to have aided his political supporters was signally defeated in the election on that issue, and his opponent has been twice re-elected and then advanced to the chairmanship of the Tramways Committee. That there is a considerable amount of non-political influence there is no doubt. Its importance lies in the fact that with manifold more applicants

than there are positions large numbers must be turned away without even being permitted to fill out an application schedule; but, backed by the influence of Councillors, they are at least admitted to the list of formal applicants and can get their qualifications and references examined into. This evidently places them in a better position than those without such influence, and it rests only on the firmness and sense of responsibility of the General Managers, and the tone and business character of the Councillors, to prevent the departments from being burdened with an inefficient class of recommended employees. The fact that the pressure of applicants upon Councillors for their influence is extreme and continuous, that some of the Councillors yield to it and in turn press upon managers for appointments, and that applicants who have the backing of Councillors have at least a limited advantage over other applicants, has led certain Councillors and managers to look with favor upon the creation of a municipal employment bureau different from the existing labor bureau, to which Councillors should be required to refer all applicants. Their ideas of such a bureau, however, are not clear, and they object to a civil service commission similar to that of American cities, both on the ground that managers in making appointments should not be tied down to the applicants through such a commission, and because they fear that it would prevent managers from dismissing employees at will. They approve of a commission or bureau that would eliminate Councillors from the question of appointments, but object to one that would restrict managers.

### Leicester Gas Department.

A former Labor member of the Leicester Town Council states that to his personal knowledge "workmen get work on the corporation through the influence of Labor and other Councillors. Applicants must have the backing of Councillors and others. In fact, many workmen vote for labor men in hope of getting work and the candidate has encouraged this hope of getting work when seeking the workman's vote. And if the hoped-for work is not found, men have said: 'When are you going to get us a job? What did we elect you for, if not to get work, and if you do not get us jobs we shall not vote for you again.'"

This Councillor, however, entirely exonerates the Gas and Electricity Department from his charge of employing workmen through the influence of Councillors. This exception, he said, was owing to the great ability and the firm character of the manager of that department. The only instance of irregularity of which he knew in that department was the case of a foreman of painters who, through familiarity with his men, had lost control over them. Their work had cost some thirty per cent. more than it should have cost through their slackness and lack of discipline. On investigation it was found that the Councillor was misinformed as to the facts, namely, that the manager, as soon as he discovered the situation referred to, had discharged the foreman and his entire gang, and had employed others in their places. The matter after-

wards came up in the committee and in the Council, and the painters' union entered a protest, but the manager was sustained and the matter was dropped.

Respecting this ex-Councillor's charge of favoritism and influence in other departments we have not made investigation, as these departments were not included in our inquiry.

### Other Municipalities.

The question of the influences controlling appointments to municipal jobs was more carefully examined in Glasgow and Leicester than elsewhere because it was brought to our attention in those cities. The only other undertaking against which charges of Councilmanic influence were heard was the tramways of Sheffield. As this undertaking was not included in our assignment for inquiry, the facts were not thoroughly examined, but we are convinced, from the statements of Councillors, trade-union agents, and conductors on the cars, that recommendations of Councillors are an important requisite in securing positions in that service. How extensive this influence is and how many of the employees owe their positions to this sort of favoritism we have not learned, but the number seems to be large and indeed the practice seems to be accepted as the proper method. Both Councillors and conductors mentioned it as a matter of course. A similar situation was not encountered in any other municipality.

We have, however, met but one instance where a municipal Council or committee managing an undertaking has taken any formal action to prevent the interference of Councillors in making appointments of employees. This is the Manchester tramways, whose committee, at the very beginning of the municipal undertaking adopted a resolution expressly prohibiting the manager from paying attention to the recommendations of Councillors. The resolution is as follows:

> "Resolved, That it be an instruction to the officials of this committee that all letters presented by those seeking employment from members of the Council be ignored, and that a preference be given to those men who apply in the legitimate way."

As far as we were able to learn this resolution has been strictly complied with, and its significance will again be mentioned in connection with the organization of the tramway workers in Manchester.

In general, the subject treated of in the foregoing paragraphs has attracted but little attention in the municipalities visited except Glasgow, Manchester and Leicester, where the policy of municipal ownership has been carried the farthest of all the places visited. In these cities it seems to have aroused more public interest and criticism than elsewhere. The only criticism encountered in Sheffield proceeded from certain labor leaders. Others did not look upon the practice critically, but accepted it as a matter of indifference, pointing to the alleged success of the enterprise as proof of its harmlessness.

*Glasgow Corporation Gas Department.*

MEMORANDA.

Reference No.....
References written for.....190....
Engaged .....190.... for.....

Remarks.
.....
.....

APPLICATION SCHEDULE.

*(To be filled up by Applicant. Nothing to be entered by Applicant above this.)*

Full Name, .....
Address, .....
.....
Age,..... Height,.....ft.....ins. Weight,.....stones.

Position Applied For.....
.....
Date, .....190....
Married or Single,.....

| Questions. | Answers. |
|---|---|
| 1. Are you at present in good health? | ..... |
| 2. From what ailments have you suffered? (Mention only those which lasted more than one week.) | ..... |
| 3. How long have you been resident in Glasgow? | ..... |
| 4. How long have you been a ratepayer in Glasgow? | ..... |
| 5. If you have been previously employed in a Gas Works, state fully where, and at what kind of labor you were employed. | At.....Gas Works<br>as .....<br>from ..... to ..... |

REFERENCES.

Applicants who have been employed in Public Works will give Department, Works No., and Foreman's Name.

1. Present or last Employer, Name and Address,.....
   Length of time in his service,.....Date of leaving,.....
   Nature of employment,.....Wages, .....
   Reason for leaving,.....
2. Previous Employer, Name and Address,.....
   Length of time in his service,.....Date of leaving.....
   Nature of employment,.....Wages, .....
   Reason for leaving,..... .....

NOTE.—It is a condition of employment that if, after the Applicant has been engaged, any false information is found to have been given on this Schedule he will be subject to instant dismissal.

## ORGANIZATIONS OF EMPLOYEES.

The managers of all the municipal undertakings investigated for this report have adopted the policy of negotiating with the representatives of their organized employees. This representative may be either an employee of the department or the secretary or business agent of the union. In the latter case the managers satisfy themselves first that the representative is speaking for employees who are actually members of the union. They make, however, a distinction in the character of the grievances or demands which they will take up with the organization. They will not discuss a matter affecting only individual employees, such as a question of promotion, dismissal, reinstatement, or other particular involving the discipline of the department. In all cases they refuse to restrict employment to members of the union, maintaining what is known as the "open shop." But they do not object to the employees' joining a union, although in two cases mentioned below the management is charged by a union official with utilizing friendly societies to prevent trade-union organization. While the managers negotiate with the union representatives regarding any question affecting a class of employees, they will not deal with the union in the cases of individual employees. All questions of wages, hours, conditions of employment and amount of work are frequently taken up and decided, sometimes by negotiation and sometimes by arbitration. In times past there have been disputes which have resulted in strikes, but the latest strike of which we have learned in any of the municipal enterprises investigated occurred in 1899. The policy of the municipal corporations in establishing a minimum wage for unorganized labor and trade-union wages for organized labor, together with the policy of managers in recognizing and dealing with unions, has practically eliminated strikes from these enterprises. In fact, as regards some of the undertakings, trade union officials complain that conditions are so much better than those their men could obtain in private employment that it is impossible to get them to join a union. Some of the older unionists and some union officials interviewed look upon this situation as objectionable, on the ground that it diverts the attention of wage-earners from the effort of building up their unions as fighting organizations to the contrary policy of relying on politics and elections. In this view they are supported by certain facts and controverted by others. Their most significant support is found in the recent appearance and rapid progress of a singular form of trade union known as the Municipal Employees' Association. This organization was founded in 1894 and had a slow growth until 1904, when its membership reached 6,410. Since that time is has increased rapidly, and claimed 13,000 members in March, 1906. Its General Secretary states that during the present year the number of members has been increasing at the rate of 2,000 per quarter.

The principles of the Municipal Employees' Association are new in the field of trade unionism in that the association rejects altogether any resort to strikes, and openly avows its purpose of

securing its demands through public opinion, the election of friendly Councillors, and the defeat of unfriendly ones. Its officers state that public opinion and the ballot are the two weapons in the hands of municipal employees which the employees of private companies do not possess, and that effectively to use such weapons they need a separate organization. The regular trade unions, they assert, do not pay attention to the grievances of municipal employees, since they are more interested in the mass of workmen outside. There is a common interest among all employees of municipalities, no matter how widely separated they may be in the character, intelligence or skill of their work. The street sweeper, the bath attendant, the motorman, the fireman, the skilled mechanic, and all who are employed by a municipality, can be of greater assistance to one another when they come together in one organization than when they are controlled by those whose interests are in private employment. If they join only the several unions of their trades, they are compelled to deal separately with their common employer, and cannot make their appeal to the public opinion of the voters or to the Councillors or to the councilmanic candidates at election time. It is because municipal employees are beginning to recognize this common interest which separates them from other workers that has led to the recent rapid growth of the Municipal Employees' Association.[1]

[1] In one of its organizing circulars the Municipal Employees' Association sets forth its claims and methods as follows:

*Why We Want a Society, and Why Every Municipal Employee Should Be a Member of the Municipal Employees' Association.*

(1) Because unity is strength.
(2) Because we can get all information as to the wages, hours of labor, emoluments, etc., from every town for each class of work.
(3) Because we could use our collective influence to get equal wages and hours, emoluments, etc., for the same kind of work in every town.
(4) Because we could use more influence if altogether, and acting together through one channel—*i. e.*, 10,000 men in one Association is stronger than 1,000 in ten different Associations.
(5) Because you require a man to represent you who has had experience in the service of a municipal body.
(6) Because the officers of this Association have worked for years for a municipal body, and, therefore, know the way to approach and deal with local authorities for you better than others who have never worked for a public body.
(7) Because you get more benefits in this Association than any other for 2½*d.* per week.
(8) Because it is estimated there are nearly 2,000,000 municipal employees in the United Kingdom. What could they not do for themselves if altogether?
(9) Because we are promoting a Superannuation Bill for all municipal employees not at present entitled to a pension.
(10) Because each branch holds its own funds.
(11) Because, no matter what class of work we do, we have the same Aldermen and Councillors to work under in each town.
(12) Because nearly every grade of municipal employment is represented already in the Association—*i. e.*, tramway employees

Of course this appeal to a common interest is based on the assumption that they can get higher wages and better conditions in municipal employment than the others can get in private employment. This assumption is seen in the demands of the Municipal Employees' Association. They ask for a minimum wage of thirty shillings in and around London and twenty-eight shillings in large Provincial towns; 48 hours per week; twelve days' holiday per annum, with pay; a pension on superannuation; half wages when sick and full wages when incapacitated through accident. These wages and conditions are far beyond what similar workmen could hope to get in private employment and even greatly in excess of what is now granted by the municipal corporations. The minimum wages of municipal employees in the places investigated range from 21s. in Glasgow to 26s. in Leicester, compared with wages for similar work in private employment of 18s. to 21s. The hours for all such common labor are 53 and 54 per week; there are either no holidays or not more than three or four per year, and no wages when sick or incapacitated. If the Municipal Employees' Association should be able to organize this class of workmen and win its demands, it would place them in a most enviable and favored position, compared with private employment.

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(all grades), asylum employees (all grades), electricity works (all grades), telephone employees (all grades), gas workers (all grades), park employees (all grades), weights and measures testers and inspectors, engine drivers (all kinds of engines), boiler stokers, sewer men, fire brigade men, carmen, pickers, general laborers, masons' laborers, sweepers, and in fact all grades.

(13) Because you should support an Association founded by municipal employees in preference to other societies established by others.

(14) Because concessions, estimated to cost the municipal authorities upwards of £2,000,000 per annum, have been obtained by us.

(15) Because we have never been defeated by a municipal body yet. If they decline a request to-day, we are up and at them again to-morrow.

(16) Because there is no need for strikes with us. We can get what we want without them, if we are united, by returning to the Council men who are in favor of fair conditions of employment.

(17) Because we are financially sound, and our accounts have been examined by chartered accountants, and we give each member a balance sheet quarterly, free.

(18) Because we have no age limits or medical examinations. We say the strong helps the weak, and the young the old, because we are all engaged in municipal employment.

(19) Because we get concessions; not shout and rave about them.

(20) Because we, at present, represent the employees under ninety-five municipal authorities.

*How We Do It.*

(1) By questions to candidates at municipal elections. Those who will not pledge themselves definitely to the above, we do not vote for.

(2) By application through the society, by petitions from the employees, etc.

(3) We do not advocate strikes or lock-outs, but give our members the money back which could be used in this way in death benefits.

In this respect the policy of this association is directly in conflict with and even antagonistic to the policy of trade unions. Their policy, as found in all of the places visited, has been embodied in the standing orders or resolutions of Councils, and is to the effect that wages, hours, and conditions shall be those recognized and practised by the private employers and trade unions of the town or district. In case of unskilled labor, if there is no union, the Council designates a minimum wage and maximum number of hours to take the place of the trade-union standard, and supposed to represent the wages paid by the best class of private employers. These standing orders govern the employees of the municipal departments, and a clause to the same purpose is inserted in the municipal contracts for work to be done by private bidders.

The policy of these standing orders may require a reduction of wages as well as an increase. This, indeed, has occurred. When the plumbers in Glasgow, for example, had a dispute with their employers and after a strike the wages were reduced halfpenny per hour, the same reduction was made in the wages of plumbers in the gas department, although the department had taken no share in the dispute, and its plumbers had continued at work during the strike. While the officials of the Muncipal Employees' Association condemn it, the trade unions approve even of this outcome, because it serves to identify the interest of those who have municipal employment with the interest of their fellow tradesmen in private employment. Even if it is not necessary for them to strike in support of private employees on strike or lockout, they at least would recognize their own interest in supporting the union and the strikers by their dues and contributions. Trade unionists take the ground that if municipal employees have better conditions than private employees they will consider themselves a separate class and refuse to join the unions or to help in their work of improving the conditions of labor in general. This would nullify and even antagonize one of the main objects which trade unionists have had in mind when advocating municipalization. Indeed, it is a settled policy of all the strictly trade-union members of muncipal Councils, as distinguished from the Socialist members, to refuse to take up the grievances of any municipal employees unless they are members of the union for their trade, and then they refuse to advocate on their behalf any condition superior to those which the trade enjoys under the more favorable class of private employers.

In both of these respects the Municipal Employees' Association conflicts with the regular trade unions. It leads to a jurisdictional struggle, because it endeavors to get the same workmen whom other unions claim for their own membership. This conflict has not until recently emerged into the open, because the Municipal Employees' Association has been insignificant in numbers, and because it has avoided conflict with the older unions of skilled mechanics. Its policy has been quite different in dealing with these older and stronger unions from that in dealing with the newer unions of unskilled workmen. In the case of the older unions it does not

invite mechanics to abandon the union of their trade but invites them to belong to both unions and to pay two sets of dues. Its own dues are only 2½d. per week as against at least 6d. paid in the unions of skilled men. But in the case of other workmen who are eligible to the more modern unions of semi-skilled and unskilled workmen, the Municipal Employees' Association either solicits them to abandon their special union or discourages them from joining it. This class of unions therefore began an attack upon the Municipal Employees' Association during the last year with the object of driving it out of the general trade union movement. Therefore it had the support of that movement, and had representatives in the Trades Union Congress and in local Trade Councils. In fact, while antagonizing other unions represented in these bodies, it relied upon its membership in such bodies for its weapons of public opinion and the election of friendly Councillors. The unions which recently began the attack upon this anomalous association with the object of depriving it of this support are the Tramway and Vehicle Workers, the Coachmakers, the National Amalgamated Union of Labor, and the Gas Workers and General Laborers. These unions submitted identical resolutions to be acted upon at the Thirty-ninth Annual Trade Union Congress, held at Liverpool in September, 1906, as follows:

**"Resolved, That any method of organizing which seeks to divide workmen employed by public authorities from their fellows in the same occupations employed by private firms is detrimental to the best interests of trade unionism, and that the Parliamentary Committee use its best endeavors to prevent the spread of such methods of organization."**

The resolution was carried by an overwhelming majority, the vote being 1,196,000 against only 42,000, and henceforth the Municipal Employees' Association, as well as similar unions in government employment, are excluded from the support of trades unions and their principles are repudiated.

Although the Municipal Employees' Association has increased its membership rapidly, its 13,000 members are as yet but a small proportion of the employees of public authorities. It is even possible that its strength is exaggerated, for of the eighteen local branches officially reported for Glasgow there were only three which were paying dues to headquarters at the beginning of 1906, and the total membership in Glasgow had fallen off one-half since the beginning of 1905. A change of officials, however, in the position of "Organizing District Secretary" is bringing about a recovery in membership. The official report for March, 1906, states also that the organization has fifteen branches in the tramway service of the London County Council, and seventeen in other departments; two in the tramways department of Manchester and twelve in other departments: and one branch at Leicester. The organization is not represented in Birmingham or Liverpool. The two branches in the Manchester tramways department are in conflict with the Tramway and Vehicle Workers' Union, which includes 90 per cent. of the employees and has represented them in arbitration proceedings.

Altogether, the Municipal Employees' Association claimed in June, 1905, to represent employees of ninety-five municipal authorities.

Another peculiarity of the Municipal Employees' Association is its demand for the "right of appeal to the committee by any employee in case of dispute before dismissal." This demand conflicts with the position taken by managers that they will not discuss with a union questions of discipline affecting only individual employees, a position which is conceded by other trade unions. To what extent the Municipal Employees' Association has been able to win this demand has not been discovered. Its quarterly reports contain statements of "concessions," under which appear items like the following: "Three men reinstated;" "five men promoted and a number of men who had been dismissed taken on again;" "right of appeal;" and so on. These "concessions" cannot always be taken at their face value. Two of their alleged concessions in the tramways department of Glasgow, relating, however, not to discipline, but to conditions of work, were inquired into, and in one case their claim was found to be correct and in the other unfounded. It appears that their officials take credit for a greater part if not all improved conditions and wages of municipal employees in towns where they have a branch.

Besides the Municipal Employees' Association, there are a few other unions made up mainly of municipal employees. This, however, is an accident growing out of the fact that municipalities have taken over the particular enterprises which employed the given class of labor. These unions are not confined to municipal employees, but their rules include the employees of private companies in the same line of work. This is noticeably true of the Tramway and Vehicle Workers' Association, which has local branches under both private companies and municipal corporations. But, on account of the greater proportion of municipal undertakings in the United Kingdom, as well as the lesser amount of opposition to unionizing, the number of branches affiliated in this union in municipal corporations is some six-fold greater than the number in private companies. The same is true, though to a lesser extent, of the dozen or more unions of laborers and gas workers. These are usually organized under the form of national unions, including employees both of companies and municipal corporations. But in some cases they have narrowed down to mere local organizations, and in one instance coming under our investigation, that of the Amalgamated Society of Gasworkers, Brickmakers and General Laborers, the union includes mainly employees of the Corporation of Birmingham. In that city the employees of private companies belong to a strictly national union, that of the Gasworkers and General Laborers, with headquarters at London. The two unions act in harmony, although separate in administration. Birmingham has also, nominally, a union of "Municipal Employees," founded in 1875, but it has dwindled to insignificance, while another union of "City Park Men" disappeared in 1905.

In the same class are minor unions of firemen, stokers, enginemen (stationary engineers), dynamo tenders and drivers, and similar specialized or semi-skilled workmen. These are poorly organized; they have only a local strength here and there; their membership is often miscellaneous and indefinite, and they sometimes lay claim to a jurisdiction which overlaps that of the tramway worker or general laborer.

The peculiarity of these unions of unskilled or specialized workmen is that they are comparatively recent; they originated under the influence of the Socialist movement of fifteen to twenty years ago; and they have always been semi-political. In this respect they differ from the old-line trade unions of skilled mechanics, although the majority of these have in the past five years followed them into the political field.

## GAS WORKS.

The National Union of Gasworkers and General Laborers of Great Britain and Ireland, organized in May, 1889, was the pioneer of these unions of the unskilled. Its organizers and leaders were John Burns, Tom Mann, Ben Tillett, and Will Thorne. At first it included only the stokers and retort-house men employed by the private companies in the London area. Here its success was marvellous and unexpected. Its demands were granted by all of the companies without a strike. They consisted in a reduction of hours from twelve to eight, an increase in the number of shifts from two to three, a corresponding reduction in the amount of work, and no reduction or even a slight increase in the week's wages. The effect of this success was revolutionary in the industry throughout the United Kingdom. Local unions of gas workers were formed independently, or through agents of the London union, and before the year was ended practically all of the gas workers in the Kingdom had secured the same conditions as those in London. In the case of the private company at Newcastle a joint delegation from the company and the union visited London in December, 1889, under an agreement to adopt the London scale of hours and amount of work and a proportionate increase in wages. In all of the corporations as well as the companies included in our investigation, the two-shift and twelve-hour system in the gas undertakings had been in vogue, and in all of them the three-shift and eight-hour system dates from 1889. In all of these seven enterprises the unions secured their demands without a strike, but in two of them—Manchester Corporation and South Metropolitan Company—there were strikes which occurred the following January. The Manchester strike was led by a revolutionary Socialist who happened to be the local secretary, in sympathy with the union at Salford. It was unauthorized and not sanctioned by the national union, and resulted in the defeat and dissolution of the union. The eight-hour and three-shift system, however, was not lost, and the national union has since that time largely recovered its ground and has been recognized by the manager and the Gas Committee in

negotiations which have brought about further increases in wages and reductions in the amount of work.

The South Metropolitan strike grew out of the attempt of the company to increase the amount of work to be done within the eight hours and its attempts to introduce a profit-sharing or bonus scheme and a twelve-month contract with individuals designed to keep the yard laborers out of the union and to win the retort-house men from allegiance to the union. The union was defeated, the profit-sharing plan was adopted, the amount of work was increased, and the twelve-hour and two-shift system was restored in two stations by vote of the unorganized gas workers, on the ground that the increased amount of work was too much for eight hours. In two other stations they voted to retain the eight-hour and three-shift system, the rate of pay according to the amount of work being the same under both systems. The union has not been reorganized, although it is said to have a few secret members in some of the retort houses. With the above exception at the South Metropolitan works the eight-hour system prevails in the retort houses of all the plants investigated, both municipal and private.

The only other undertaking in which the National Union of Gasworkers and General Laborers has members is the municipal gas works at Leicester. These are members of a strong local branch of general laborers, but the number in the gas works is very small and is confined to one station. The officers of the national union have recently attempted to organize the gas workers of Leicester, but did not succeed because the wages and labor conditions were already better than anything the union could propose. Some of the other places where the union claims members are the municipal plants of Bradford, Huddersfield, Leeds, Nottingham, Swansea and the private company plants of Sunderland and Carlisle. In the employment of other private companies the union has iron, steel, and tin plate workers, foundry laborers, quarry workers, building laborers, rubber workers, laborers in cotton mills, shipbuilding and engineering works, window cleaners and car-shed men in tramways. The total membership of the union in 1905 was 30,000.

The Socialistic and political character of this union may be seen from the statement of its "objects" as they appear in its organizing circulars. They are as follows:

1. To shorten the hours of labor, to obtain a legal eight hours' working day or forty-eight hours' week.
2. To abolish, wherever possible, overtime and Sunday labor, and where this is not possible, to obtain payment at a higher rate.
3. To abolish piecework.
4. To raise wages, and, where women do the same work as men, to obtain for them the same wages as paid the men.
5. To enforce the provisions of the Truck Acts in their entirety.
6. To abolish the present system of contracts and agreements between employers and employed.
7. To settle all labor disputes by amicable agreement whenever possible.

8. To obtain equality of employers and employed before the law.
9. To obtain legislation for the bettering of the lives of the working class.
10. To secure the return of Members of the Union to Urban District Councils, Boards of Guardians, Municipal Bodies, and to Parliament, provided such candidates are pledged to the collective ownership of the means of production, distribution and exchange.
11. To set aside annually a maximum sum of £250 from the Central Fund, to be used solely for the purpose of helping to return and maintain members on public representative bodies.
12. To assist similar organizations having the same objects as herein stated.

In line with its political policy the union has at times nominated its officers as candidates for legislative positions. As early as 1892 its General Secretary, Will Thorne, stood for Parliament in the district of West Ham, and in the election of 1905 four of its general and district officers were candidates, and three of them, including the General Secretary, just mentioned, were elected and are now members of Parliament.

In addition to its political program, this union differed from the old-line trade unions in the early days of its organization by its rejection of benefit and friendly-society features. These were believed to have weakened the older unions and to have made them timid in their attitude towards employers and selfish towards the unorganized. The new union was intended to be only a fighting organization and its benefits were limited to the aid of men during contests with employers. But the force of circumstances, especially the extreme fluctuations in its membership, has induced it to annex benefits for disablement, accident, sickness, death and burial. These are secured, however, by extra payments in addition to the low regular dues of 3d. per week. The union also furnishes legal aid to all of its members in protecting and prosecuting their rights under the Compensation Act, Employers' Liability Act and the common law.

### National Amalgamated Union of Labor.

Similar to the union of Gas Workers and General Laborers, and organized in the same year, 1889, is the National Amalgamated Union of Labor, with headquarters at Newcastle-on-Tyne. Its membership in 1905 was 18,000, covering sixty-two occupations, mainly in private employment. At Sheffield, this organization has some 3,800 members, of whom about 700 are in the several municipal departments. The local secretary at that place has been for three years a member of the municipal Council. The Gas Workers and General Laborers have also an organization among private employees at Sheffield, but neither organization has any representatives in the employment of the Gas Company. The former local union of the Gas Workers disappeared gradually, owing in part to the shrewd management of the company and the well-known hostility of its president, who had successfully attacked and defeated the union of file makers in another enterprise. The gas

workers' union, however, had received the eight-hour day and advances in wages, and it retained the older men as long as hand-stoking was in vogue. But with the introduction of mechanical stokers these dropped out, and the union has not been reorganized.

The position of the Sheffield company is most significant and instructive from the standpoint of unionism and labor conditions. The limits placed by Parliament on the amount of capital issued and on the rate of dividend at 10 per cent. of that capital, as well as the limit on the reserve fund, compel the company to use its surplus earnings either in permanent improvements, in reducing the price of gas or in raising wages. It has done each of these things, since the Parliamentary limits have long since been reached and no extension of these limits has been secured. In addition to these fiscal limits, the Municipal Council of Sheffield elects three of its own number to be members of the Board of Directors of the Company. They are not allowed to be shareholders or to have any interest in the Company whatever, and they get no compensation for their services, although the other nine directors, elected by the shareholders, have £2,000 divided annually among them. The municipal directors are, of course, a minority, but they are entitled to sit at all of the official meetings of the board, to be placed on the three sub-committees, and to have access to all the works, offices and accounts, the same as other directors. They are elected annually, and for several years one of these municipal directors has been a labor member of the Council, the oldest member (twenty years' service) on the Council, and secretary for twenty-two years of a local union of file makers. He has considered it to be his duty not only to guard the interests of the municipal corporation and ratepayers in the Board of Directors, but also to guard the interests of labor. On all occasions when wages, hours, and conditions of the Gas Company's employees have come before the board he has endeavored to secure for them liberal allowance. His presence on the board, coupled with the large surplus earnings not permitted to go to dividends, has been a factor in securing and maintaining the wages and hours enjoyed by the employees of the company. In the case of laborers the minimum wages are the same as the minimum paid by the municipality of Sheffield, although there are but few employed at that rate. In the case of mechanics the policy of the company is to observe the trade-union rates of wages for the town, although there are exceptions to the policy, to be noted later. The wages of common laborers, which in some cases are as good and in other cases even better than those which either a trade union or the municipal corporation secures in Sheffield, have had the effect of loosening the hold of the union on the employees. They look to the labor Councillor on the Board of Directors to protect their interests, in much the same way that the gas workers in the municipal enterprises look to the labor Councillor instead of the union.

There are, however, certain disadvantages under which this trade-union Councillor and director labors. Instead of being placed

on the works sub-committee which deals directly with the management of the employees, he is placed on the accounts committee; and since there is no organization of the employees and consequently no representative to speak for them, he is not informed of their grievances as they arise and is not in a position to investigate them to advantage. Employees who complain of grievances have not made them public nor brought them to his attention, and they speak of them only in confidence, owing to their fear of being discharged. This is true of the cases where the company is not actually paying the trade-union rates of wages and of the cases where the amount of work required of stokers has been increased. This latter grievance stirred up a movement among the stokers during the past winter towards a reorganization of the union, but it did not go as far as an enrollment. If these grievances had been brought to the attention of the labor director he is confident that they would have been remedied, for he holds that there is no gas undertaking in the United Kingdom from which it would be easier to get the top wages and the fairest conditions of work.

The National Amalgamated Union of Labor has a local branch at Liverpool also. This is a small local of about a thousand members, the bulk of whom are employed by private firms, but a few are in the corporation service. The significance of this local union for our investigation lies in the fact that its minimum scale of 24s. for the wages of laborers is accepted by the corporation of Liverpool as the trade union scale for the district, in the same way that the scales of older and stronger unions are accepted.

The only complete and thorough unionizing of workmen in any of the enterprises examined is found among the gas workers and laborers of the private company at Newcastle. So complete is this organization that the company describes their gasworks as practically a "closed shop," both in the retort-houses and in the yards, although, in the distribution department workshops, where mechanics are employed, the "open shop" exists. This union of gasworkers is also a local branch of the National Amalgamated Union of Labor. It has continued an uninterrupted existence since its first organization. The wage scales since that time have been agreed upon by negotiation or referred to arbitration between the Board of Directors and the union representatives. In this way, besides many partial advancements and improvements, there have been made two notable advances; first, that of 1889 by negotiation, already mentioned, and second, a general advance in 1900, awarded by an arbitrator. During one year, 1898, a Board of Conciliation was in existence, one-half of the members of which were elected by the Board of Directors and the other half by the workmen, with a referee appointed by the Conciliation Board. This arrangement was unsatisfactory to the workmen and they withdrew from it. With this exception, and that of 1900, labor disputes have been settled by direct negotiation. There has not been a strike in the works for forty years, during seventeen of which the works have been unionized. The reasons ascribed by the two parties for this state of

their affairs are, on the part of the management, that the union, especially in the past few years, has been entirely reasonable and its leaders have been honest and fair-minded; and on the part of the union, that the Board of Directors are reasonable and fair-minded, that the business has been highly profitable, and that the workmen have been so thoroughly organized. The officers of the union, although they are admitted to the works at any time without question, have very few complaints from the men. The men bring their complaints directly to the managers, who often make satisfactory arrangements without the appearance officially of the union.

The extent to which the Newcastle Gas Works are really a "closed shop," as stated by the company, is a matter of definition. The company does not agree to employ only union men and, as a matter of fact, is continually taking on non-union men. It is the business of the union agents and stewards, after the men are employed, to get them if possible into the union. But the managers and foremen also advise the new men to join the union, and if a member persists in neglecting to pay his dues the union has the help of the management in advising him to pay up. At the time when mechanical stokers were introduced the hand stokers were given a preference in manning them, but if they were not efficient outsiders were substituted. These afterwards joined the union, so that the introduction of machinery has not displaced the union. Such being the situation, the Newcastle Gas Works is not "closed" against non-union men, and is not strictly a "closed shop." It would generally be understood to be a "union shop." But the distribution workships, where the employees are both union and non-union men, is properly an "open shop."

The National Amalgamated Union of Labor has adopted a system of accident and funeral benefits, in addition to strike and victimization pay and legal aid. It has no sick benefit, but has gone further than the Gas Workers and General Laborers in that these benefits are all included in the regular dues, which are 3½d. per week.

**Gas Workers, Brickmakers and General Laborers.**

The Birmingham union—the Amalgamated Society of Gas-workers, Brickmakers and General Laborers—is independent of the national societies above mentioned. It also was organized in the year 1889, at which time it secured the eight-hour day in the municipal gas works without a strike. It includes at the present time 3,700 members in forty-one branches. It is peculiar in that, as regards the city of Birmingham, its membership is limited to employees of the municipality in various departments, of whom it includes about 2,500. This division has come about through an understanding with the National Union of Gas Workers and General Laborers, which solicits the employees of private firms. This union, therefore, while organized on industrial lines with the customary provisions for strikes and victimization, approaches in character the Municipal Employees' Association. That organization has

no representatives in Birmingham. The Gasworkers' Secretary has for several years been a member of the corporation Council and is a member of the Public Works Committee which employs members of his society. He is not a member of the Gas Committee, the labor representative of which is the Secretary of the Tin Plate Workers' Union. The schedule of wages and amount of work is agreed upon by negotiation between officers of the union and the gas committee. The union has never had a strike in Birmingham, although there had been two strikes of gas workers in the '70s and '80s prior to the time of its organization. The Secretary's policy is openly that of avoiding strikes. The Gas Works are conducted on the "open shop" principle, and both union and non-union men are in the service. The foremen hire the men as they see fit, but through the efforts of the union during the past year in negotiations with the Gas committee, a rule of seniority has been adopted, in order to do away with the favoritism of foremen. In line with this rule, the last man laid off is the first taken on. In case of discipline the employee has an appeal to the engineer and then to the committee. The union endeavors to secure the men after they are employed. In this its success has been fluctuating. The membership increased at the time when the minimum wage was being promoted, but fell off after the minimum wage of 23s. was granted in the gas department six years ago. This experience led the union to establish an accident benefit in 1903, since which time it has held its members. It now relies mainly upon the benefit features as an inducement. These include payments on account of accident, death, and out-of-work. At present, the prospect of getting the minimum raised to 25s. has served to increase the membership. The Gas Workers, as well as the other trade unions in the department, make their requests for wages and hours through their representatives to the committee, which after investigation decides.

In Manchester, besides the local branches of the National Union of Gas Workers and the Municipal Employees' Association, there are two or three small independent unions of laborers with a few men in corporation departments. One of these, the British Labor Amalgamation, had at one time 1,700 members, but has since declined to less than 1,000, mostly employed by private firms. The Secretary of this union is also Secretary of the Manchester and Salford Trades and Labor Council and was elected to the Municipal Council of Manchester in 1904.

## TRAMWAYS.

Of the seven tramway enterprises investigated there are but three in which the traffic employees are organized and recognized as a union. These are the municipal undertakings of Manchester, the London County Council and Glasgow. The employees are not organized on the municipal system of Liverpool, nor on those of the private companies in Dublin, Norwich, and London. In Manchester and London there are two conflicting organizations, the Tramway and Vehicle Workers, and the Municipal Employees'

Association. In Glasgow there is a branch of the Municipal Employees' Association.

The Amalgamated Association of Tramway and Vehicle Workers was organized in 1889, through the union of local societies, and was known as the "Amalgamated Association of Tramway, Hackney Carriage Employees and Horsemen in General." Its present title was substituted in 1902, and it claims jurisdiction, as its titles indicate, over not only tramways employees, but also teamsters. The different classes of workmen who are eligible are: "Tramway drivers and conductors, motor drivers, inspectors, timekeepers, cab, omnibus, and car drivers, and guards, carters, coachmen, draymen, liverymen, horsekeepers, stablemen, washers, cleaners, farriers, yardmen and vanmen." This miscellaneous jurisdiction brings the union into conflict with many local unions of cabmen and team drivers, but since the adoption of electric traction its growth has been mainly in the tramway service. Its members are mainly motormen and conductors. In 1899 its membership was 7,356, in 1905 11,059. The proportion differs greatly in the municipal and private undertakings. Of the 19,000 employed by corporations, the associate has 9,500 members, or one-half, and of the 5,500 employed by companies it has 1,500, or something less than one-third. Six-sevenths of its members are in municipal employment.

The regular dues of this association "for the union part only," are 3d. per week, but there are three additional scales for benefits at 6d., 9d. and 1s. The "union" dues provide strike and victimization pay; legal assistance, travelling allowance and a temporary accident benefit. The additional scales secure sick, accident, superannuation, and funeral benefits. The union had in its central and branch treasuries in December, 1905, £21,606.

The largest local membership of the Tramway and Vehicle Workers is 2,100 in Manchester and 935 in Salford—the two corporations which divide the municipal area. Salford is the headquarters of the association, and its General secretary is a member of the Municipal Council. In Manchester the union was in existence when the service was under private control, and in 1896 it secured from the company the double shift by which it was agreed that the hours should be reduced to sixty-nine per week of seven days without a reduction in wages. Notwithstanding this reduction, the men worked on occasions as high as one hundred to one hundred and nine hours per week. When the corporation was preparing to take over the service in 1899, a deputation from the society conferred with the Tramways Committee respecting the terms which the members should secure under municipal operation. The "split turn" system, which the corporation introduced, of nine hours in fifteen, or fifty-four per week, was opposed by the society, and afterwards the corporation substituted the double shift of nine hours per day, fifty-four per week.

Beginning in this way, the union has played a part in Manchester during the entire period of municipal management. In all

matters affecting a class of employees the manager consults with the union representative and issues his orders after such negotiations. In case an agreement is not reached the matter is submitted to arbitration, this being the case with the demand in the spring of 1906 for extra pay on Sunday. The question was referred to an umpire appointed by the Board of Trade under the Conciliation Acts, and his decision was in favor of the corporation.

On all matters affecting individual employees, such as employment, promotion and dismissal, it is understood on both sides that the union shall not be consulted. It is the policy of the tramways committee to make the manager the sole authority in the selection of his staff of employees, and this is seen both in a resolution of committee adopted at the time when the enterprise was taken over, instructing him to ignore letters from Councillors, but to give preference to men "who apply in the legitimate way," and in the "open shop" policy respecting the union. At the same time, experience has also shown that the recognition of the union as the official spokesman for the employees in making their demands relieves individual Councillors of pressure from that side as well as the manager from the solicitation of Councillors. Largely for this reason the management has encouraged the unionizing of all the employees. Demands or requests made through the union are known to have had the discussion and support of the employees, but when they are made through the individual Councillors it is impossible to tell whether they come only from a few restless and irresponsible spirits or a fully informed and wholly disinterested Councillor. But when the requests come through the union they have a definite and precise standing, they are taken up deliberately, openly and officially, and if they cannot be satisfactorily met by agreement are referred to arbitration. By this threefold policy of prohibiting letters from Councillors, preventing union inquiry into discipline, and encouraging union negotiation on labor conditions, the Manchester management believe they have protected the service from political, personal or other undue influence. As far as we have inquired we have found no instance or charge of such influence.

Recently the Municipal Employees' Association has catered to the Tramway employees in Manchester, but its membership in that department is small and not of importance in negotiations with the management. It interferes only with the efforts of the Tramway and Vehicle Workers in securing members. The 2,100 members of the latter organization include the bulk of the traffic staff, which numbers 2,206 employees. Of the remainder of the 3,800 employees, the mechanics pertain to the old-line unions, while the laborers on the permanent way and in the car sheds are diverted by the claims of several weak but overlapping unions.

In Glasgow and Liverpool there has been until recently no organization among the tramway employees other than the mechanics in the shops. In Glasgow within the past six months the Municipal Employees' Association has enrolled some of the

employees, and the organizer has been recognized in negotiations with the manager relative to proposed changes in the shifts for motormen and conductors. At Liverpool, prior to municipal ownership the operating company prevented organization of the employees, and when the corporation took over the enterprise it retained the same officials who had carried out this policy. On this account, although the management has been indifferent to the question, the employees were loath to join a union. Shortly after municipalization, the Tramway and Vehicle Workers effected an organization. This was weak and of short duration, partly because the local officers in charge proved incompetent or dishonest, one of them going away with the funds. The union disappeared and has not been reorganized.

In both Glasgow and Liverpool the corporation, soon after municipalization, established friendly societies, to which both employees and the corporation contributed. To the existence of these organizations, described below, the union officials attribute a large part of their difficulty in organizing the employees, and they hold that the friendly societies were designed to take the place of the union. The societies have been described by the former chief officer of the London County Council Tramways,[1] as enormously successful and as an example for other cities to imitate, on the ground that such an investment, after putting the men under proper conditions of labor, has a tendency to attract good men to the service and to a considerable extent to bind them to it and also to induce cheerful, contented and loyal service.

At Dublin there was organized in 1901 a local society, the Dublin and District Tramwaymen, whose membership in 1902 reached 497. It was dissolved in 1904. Afterwards, on the invitation of the Dublin Trades Council the secretary of the Tramway and Vehicle Workers endeavored to organize the employees as a branch of the national organization. Some money was spent and the town was billed for meetings, but they turned out a total failure, the men refusing to respond to the invitation. The secretary concluded that "the men allowed their politics to interfere with their trades-union principles."

At Norwich the same association recently opened a branch, and the men asked for an increase in wages and extra time allowance. The president and secretary of the branch were dismissed by the company and were thereupon placed on victimization allowance by the association. Indignation meetings were held and public men of different shades of politics and denominations took part. But this did not save the organization, for the members fell away and the branch was dissolved. Sympathizers found positions elsewhere for the dismissed officers.

On the London County Council Tramways, according to the estimate of the secretary, about 90 per cent. of the motormen and conductors are members of the Tramway and Vehicle Work-

[1] Address, Annual Meeting of Municipal Tramways Association of Great Britain, 1903, by Alfred Baker.

ers' Association. An attempt was made some time since by the association to organize the employees of the London United Tramways Company, but they were notified not to attend the meeting. Two of those who attended were dismissed and the association prosecuted the company in court for wages in lieu of notice. The project of an organization fell through.

### ELECTRICAL INDUSTRIES AND POWER HOUSES.

The electrical industries of Great Britain have arisen since the beginning of the "new unionism" in 1889, and although these have produced a class of skilled mechanics yet the character of their unions is similar to that of the unskilled and specialized workmen just described. One of the older unions, the Amalgamated Society of Engineers, in addition to its provision for machinists, millwrights and men of like occupations, provides for electrical engineers and armature winders. But this union has never enrolled many of this class of mechanics, and its local schedules of wages omit almost entirely the armature winders. The union that nominally includes all electrical workers is the Electrical Trades Union, and its claim is recognized in the fact that during the present year it has been admitted to the Engineering and Shipbuilding Federation along with the Amalgamated Engineers. This electrical workers' union was established in 1889, but its membership is only 1,100, which it did not attain until 1902. Its largest local enrollments are 198 in London, 167 in Manchester, and 149 in Glasgow. It has 41 members in Liverpool, 35 in Newcastle, 34 in Leicester and 4 in Dublin. Its dues are 4d. per week in the "trade section" and 10d. in the "full benefit section."

The various classes of electrical workers included in this union are wiremen employed by contractors in the building trades, armature winders and instrument makers employed by manufactures, and generating station attendants, trimmers and jointers employed by electrical supply companies and municipalities. The bulk of its membership is employed by private firms seeking municipal contracts. Of 250 employees in the plants of the London County Council eligible to membership the Electrical Trades Union has 20; and one-fourth of its members in London are employed by public bodies. It has the armature-winders in the car works of the Glasgow Tramways. In general the wages and conditions of electrical workers employed by municipalities are equal or superior to what the union can secure, and it is therefore difficult for the union to persuade them to join. Only in a case like Woolwich, where the Borough Council proposes to reduce wages, are the employees coming into the union.

This union is peculiar in that it relies for the main support of its membership upon the wage clauses in municipal contracts.[1] Under these clauses, contractors for municipal work who can be

[1] See Heading: "Trade Union Wages."

shown to pay less than the union rates are liable to be excluded from competition or to have their contracts terminated. Evidence of their evasions can usually be secured only in case some of their employees are members of a union, and an inducement to employees to join the union is the part it plays in enforcing the wage clauses of their employers' municipal contracts. A weak union, like the Electrical Trades Union, with one-fourth of its members in municipal employment, secures many of the other three-fourths among the employees of municipal contractors. This is partly a cause of its weakness; contractors select its members when they have municipal contracts, but select non-members, at lower wages, for their private contracts. One plan of the union to overcome this discrimination is to secure a clause in the municipal contracts, like that in Glasgow, requiring the contractor to pay the standard wages "for all classes of work, whether contract or otherwise." Another plan is that effected in Leicester, where the union has a trade agreement signed by the representatives of the union and by the contractors along with the municipal wiring department. The list of employers signing this contract becomes the municipal list of eligible contractors who are regularly paying the scale agreed upon. In other localities, the union has not secured these arrangements, but it issues simply a card of "Working Rules," or "Trade Regulation Circular," which it strives to induce employers to adopt and the municipality to accept as the trade union conditions for itself and its contractors. That these cards are not effective is shown by the fact that the rates established by the London County Council are lower than the card rates in the case of jointers, transformer winders, switchboard attendants and dynamo attendants.

The Electrical Trades Union is strongly Socialist in character, and its official organ, "*Eltradion*," carries on a propaganda for that cause. "Public services, so-called," it says:

"seem more appropriately to belong to the community and for that reason we give special attention and effort to their furtherance. When we have conquered municipalities we will put our hands on the trusts and minor companies. We are under no delusion as to Labor having an ideal time of it, or getting a true equivalent under municipalization as at present conducted. It must be patent to the meanest capacity that the municipal services are worked exactly on the same lines as capitalist concerns, they taking the latter as a pattern. Pressure, however, can be brought to bear upon them much better than upon the capitalist, and we hope soon to see established a municipal wage of 30*s*. for all municipal adult labor, until such time as the democracy adds to its strength and can dictate further demands."[1]

The officers of this union expect their own industry to lead in the movement.

"What we desire to see is the Electrical Industry and all its branches taken out of the hands of private persons. With electric power in the hands of the people it will pave the way for further advance when the necessity arrives to enter into the production of some commodity which has come under the control of a trust, and recognized to be harmful to the community."[2]

[1] Eltradion, May, 1905. [2] Eltradion, August, 1906.

Coming to more immediate issues in the electrical industry, the official organ says:

"The municipality as a wiring contractor is a much better body to get at than the ordinary contractor, who is perfectly unscrupulous in his dealings with his men, and who is not above telling deliberate lies in order to deceive his customers as to the low wages he pays, and the bad labor he employs. The private employer is not subject to the political forces that play upon a municipal body. We shall do our best to see that the best material, as well as the best paid labor, shall be used by the London County Council. If the L. C. C. takes up the wiring business with spirit, they should absorb the whole of the wiring trade. The sooner they do this the better for London and the County generally."[1]

**Engineers and Firemen.**

Among the enginemen (stationary engineers) and firemen, in Great Britain, there is a large number of local and district organizations. Nearly all of them have been formed, like the unions of laborers, tram and electrical workers, since 1889. Their financial system is on the basis of low dues, usually 4½d. per week, which provides accident and death benefits in addition to dispute benefits, and they have additional dues for sick or other benefits.

These local unions of enginemen and firemen have not been consolidated into a single national union. Even those that claim the adjective "national" are confined to one locality or district. The membership of the largest one is 6,000 (1905); another has 3,000 members, and others run as low as 15, 27, 30, 70, and so on. The strongest unions of enginemen and firemen are found in the collieries, organized separately from the miners. In the cities these organizations are quite inferior and there are many records of dissolutions, secessions and annexations. Very few union enginemen were found, and even a smaller number of union firemen, except in the gas undertakings, where they belong to the gas-workers' union. The firemen are not organized separately, as in the United States, but are claimed by the enginemen. These unions also sometimes overlap the electrical workers in their claims of jurisdiction over dynamo attendants, and even the tramway motormen are on their list. Thus the Northern United Enginemen's Association (Newcastle) endeavors to include "enginemen, gas enginemen, cranemen, electric crane, motor and car-drivers, inspectors and conductors, or friction cranemen, boilermen, firemen, or hammer drivers of any department." With these miscellaneous claims and conflicts of jurisdiction, the work of organization is not specialized, and the different classes of workmen are not sought out by organizers of their own occupation. The firemen, especially, are neglected, since there is no organization appealing solely to firemen, with organizers acquainted with the fireman's work. The large number of independent and local unions, able to support only an office secretary, also prevents effective work in organizing. Compared with the active unions in American cities there is in England almost no union movement among the men in the boiler-room or engine-room.

[1] Eltradion, August, 1906.

### Skilled Mechanics.

The employment of skilled mechanics is but a small and incidental feature of the labor force in the enterprises investigated. It occurs mainly in the "engineering" (machinists, etc.) and building trades, and among the mechanics who are employed for repairs and maintenance. New construction is usually done by contractors, and in the case of municipal enterprises these are required to pay the union scale of wages. Stores, equipment, uniforms, etc., are purchased from manufacturers upon similar terms respecting wages. The unions of skilled mechanics are therefore more interested in the wage clauses of the municipal contracts than in the direct employment of their craftsmen. Only in a case like the Glasgow tramways, where the department not only repairs but also builds its cars, is the direct employment of skilled mechanics a considerable proportion of total employment.

The union of mechanics most generally affected by municipalization is the Amalgamated Association of Engineers, founded in 1851. This union nominally includes a large number of trades, but its membership is mainly composed of machinists (classified in the wage scales as fitters, turners, planers, etc.), blacksmiths and millwrights. The evolution of machinery in the "engineering" industry has affected this union by the increased number of semi-skilled machine-workers who are able to take the places of engineers at lower scales of wages, so that notwithstanding its large membership of 90,000 it does not include a majority of the men in the trades concerned. Yet it continues to control a majority of the skilled mechanics, especially the fitters and smiths. These are the men required mainly in repair shops of public utility undertakings where the work is not specialized and the all-round mechanic is needed.

The Amalgamated Engineers is a type of the old-line trade unions with high dues and large benefits. The contributions of the 96,000 "full members" are 1s. 6d. per week, or from four to six times the amount paid to the unskilled unions above described. Compared with the average wage scale of 35s., these dues are also five or six times as high as the dues of the corresponding unions in America. The benefits of the union are extensive, including payments on account of sickness, superannuation and unemployment, which absorb two-thirds of the weekly dues. The union has accumulated a fund of $3,280,000.

In all of its dealings with employers, the "open shop" rule has since 1897 prevailed, and this is the case in municipal employment. The union relies upon its benefits to attract and retain its members and upon the activity and watchfulness of fellow workmen in getting a preference for its members in the shops. Several of its members have been elected on Municipal Councils and they likewise exert themselves to get a preference for union men in municipal employment. In 1906 the union furnished the Labor Party with five candidates for Parliament, two of whom were elected. This election enabled the General Secre-

tary, now a member of Parliament, to get the first hearing for his and other unions before the Admiralty Board.

The foregoing account of the several labor unions affected by the policy of municipal ownership brings out the marked distinction between the old-line unions of skilled mechanics and the new unions of unskilled or specialized workmen. The latter are the classes of labor employed in the largest numbers in the enterprises investigated. The following table shows the membership of these unions as represented in the Trades Union Congress during the past four years:

*Membership of Unions Affected by Public Ownership.*[1]

| *Unions.* | 1903. | 1904. | 1905. | 1906. |
|---|---|---|---|---|
| Municipal Employees' Association.... | 3,000 | 4,000 | 5,000 | 10,000 |
| Gas Workers and General Laborers... | 40,986 | 32,000 | 30,000 | 29,000 |
| Gas Workers (Birmingham)..... | 4,000 | 3,458 | 3,648 | 3,863 |
| National Amalgamated Union of Labor | 20,500 | 20,000 | 17,835 | 20,000 |
| Tramway and Vehicle Workers..... | 12,000 | 12,000 | 12,000 | 13,000 |
| Electrical Trades Union..... | 1,217 | 1,136 | 1,099 | 1,144 |
| Enginemen's Protective Association.. | 10,000 | 4,000 | 5,000 | 5,000 |
| Enginemen, National Amalgamated... | 7,000 | 6,245 | 6,000 | 6,000 |
| Engine, Crane, Boiler and Firemen... | 3,169 | 3,106 | 3,037 | 3,716 |
| Enginemen, Northern United..... | 1,524 | 1,200 | 1,000 | 1,300 |
| Engineers, Amalgamated (machinists) | .... | .... | 90,000 | 90,000 |
| Carpenters, Amalgamated..... | 65,000 | 64,000 | 61,780 | 57,224 |
| Bricklayers, Operative..... | 38,410 | 37,821 | 35,480 | 32,000 |

## LABOR AND POLITICS.

After the great impulse of organization among unskilled laborers in the year 1889 the unions rapidly declined. A long period of industrial depression, coupled with defective methods, overlapping claims without centralized control, and the lack of benefit systems, caused their membership to fall off. The older unions, having benefits, retained their membership to a greater degree, but both classes of unions lost their aggressiveness after the Taff Vale and other judicial decisions in 1901 which placed their funds in jeopardy. Those decisions had the effect of turning the older unions into the field of political activity. In this they have followed the leading of the newer unions, which have always set forward prominently their political programs. The political interest of the unions has shown itself not only in parliamentary elections, but also in municipal elections. Their immediate purpose was to secure amendments to the Trade Union Acts merely as a means of strengthening the unions as a factor in private industry. But once launched in that field they have supported other measures more Socialistic in character.

The initiative in this political movement was made by the Trades Union Congress. That body, unlike the American Federation of Labor, has always been an organization mainly to promote labor legislation. Its Executive Committee is a Parliamentary lobby, known as the "Parliamentary Committee," and the sessions of the Congress are occupied almost solely with the report

[1] Reports Trades Union Congress.

of that committee on legislation, and with debates and resolutions instructing the committee upon measures to be presented in Parliament. The strictly industrial alliances of British unions for joint action in dealing with employers, corresponding in the main to the American Federation of Labor, are brought about by a large number of special, and often overlapping, Federations, the leading ones being the Federation of Engineering and Shipbuilding Trades, the Miners' Federation, and the General Federation of Trade Unions.

The first ten years' existence of the Trades Union Congress were occupied with the hostile legal decisions of 1867-'71, and the enactment of the Trades Union Acts of 1871 and 1876. At that time labor candidates were put in the field and the first labor members of Parliament were elected. For a period of more than twenty years this political action was discontinued, but again in 1899, accompanying a new series of legal decisions undoing in part what the unions had secured in the Act of 1876, the Trades Union Congress proposed the election of labor members. To do this the Congress joined with the Independent Labor Party, the Fabian Society and the General Federation of Trade Unions in creating a "Labor Representation Committee." The General Federation of Trade Unions, organized in 1899, representing the strictly industrial side of British unionism, has 105 societies and 500,000 members (also represented in the Trades Union Congress), with an accumulated fund of $660,000 for the support of unions on strike. The Independent Labor Party is the more moderate of the two Socialist parties, and the Fabian Society is a society for Socialist propaganda. At the general election in January, 1906, this alliance elected twenty-nine Members of Parliament, several of whom are secretaries and officials of trade unions. At this election there were also returned eleven members representing Miners' Associations, not affiliated with the Labor Party, and fourteen other labor members. These are mainly members of the Liberal party and they follow the whip of that party, whereas the candidates of the Labor Representation Committee each sign a pledge constituting themselves an independent labor party.

At the Sixth Annual Conference of the Labor Representation Committee, in February, 1906, the name was changed to "The Labor Party," and, while a party platform or "program" was negatived, the following propositions were endorsed:

The Trades Dispute Bill, as formulated by the Trades Union Congress;

A national system of free and secular education, the education authority, instead of the Poor-law authority to be responsible for feeding the school children;

Taxation of unearned incomes for the purpose of social reform;

National legislation on behalf of the unemployed;

Compulsory closing of shops on the basis of sixty hours a week;

Local referendum for saloon license;

Equal suffrage for all men and women without property qualification;

Removal of the restrictions on political activity of Postal employees;

Trades Union rates and 30*s.* minimum wages in Government employment;

Creation of special committees by municipal councils "to watch over the observance of the local Fair Contracts Clause, and to keep a list of employers who fail to observe it."

The Trades Union Congress, at the session of 1905, adopted without debate the following resolutions on subjects relating to municipal ownership:

*Municipal Trading.*—"That we call upon the Parliamentary Committee to bring all possible pressure to bear upon the members of Parliament, and other public representatives, so that public bodies may be empowered to enter into, and carry on, any work or business on behalf of the people, so as to steady the volume of trade and provide work at fair rates for those who would otherwise be idle."

*Municipal Banking.*—"That, in order to provide larger means of carrying out social reforms, public administrative bodies be empowered to issue their own credit notes, thereby avoiding the heavy interest charged for the use of borrowed money, and the Congress hereby instructs its Parliamentary Committee to draft a bill embodying this principle, and to use all possible means to get the same passed into law."

*Hours of Labor.*—"That, in view of the present rapidity of production and the continuous introduction of labor-saving machinery, and the consequent displacement of manual labor in many industries, this Congress declares in favor of shortening the hours of labor to not more than eight hours per day or forty-eight hours per week, as a means towards the absorption of many of those workers who are at some seasons of the year thrown out of employment; and also calls upon the organized workers of the United Kingdom to make this one of the test questions at all Parliamentary and municipal elections."

The statistical progress of these principal organizations representing the legislative, industrial and political alliances of labor in Great Britain is shown in the following table:

| | *Trades Union Congress.* | | *General Federation of Trade Unions.* | | *Labor Representation Committee (Labor Party).* | | *Local Labor Representation Committees.* |
|---|---|---|---|---|---|---|---|
| *Year.* | *Trade Unions.* | *Members.* | *Societies.* | *Members.* | *Trade Unions Affiliated.* | *Members.*[1] | *Number.* |
| 1889..... | 145 | 687,035 | ... | ..... | ... | ..... | .. |
| 1890..... | 268 | 1,592,850 | ... | ..... | ... | ..... | .. |
| 1891..... | 274 | 1,093,892 | ... | ..... | ... | ..... | .. |
| 1892..... | 251 | 1,155,448 | ... | ..... | ... | ..... | .. |
| 1893..... | 198 | 720,873 | ... | ..... | ... | ..... | .. |
| 1894..... | 165 | 1,014,607 | ... | ..... | ... | ..... | .. |
| 1895..... | 154 | 960,931 | ... | ..... | ... | ..... | .. |
| 1896..... | 145 | 1,028,104 | ... | ..... | ... | ..... | .. |
| 1897..... | 149 | 1,093,191 | ... | ..... | ... | ..... | .. |
| 1898..... | 159 | 1,176,896 | ... | ..... | ... | ..... | .. |
| 1899..... | 147 | 1,120,164 | 43 | 343,000 | ... | ..... | .. |
| 1900..... | 140 | 1,225,133 | 59 | 377,729 | ... | ..... | .. |
| 1901..... | 140 | 1,195,469 | 72 | 409,849 | 41 | 375,931 | .. |
| 1902..... | 163 | 1,363,292 | 77 | 419,606 | 65 | 469,311 | .. |
| 1903..... | 162 | 1,300,732 | 79 | 421,824 | 127 | 861,150 | .. |
| 1904..... | 159 | 1,320,432 | 85 | 423,998 | 165 | 969,800 | .. |
| 1905..... | 154 | 1,469,514 | 92 | 400,250 | 158 | 900,000 | 51 |
| 1906..... | 165 | 1,484,101 | 105 | 501,299[2] | 158 | 921,280 | 75 |

[1] Including Socialistic societies, 22,861 in 1901 and 16,784 in 1906.

[2] Increased to 601,000, November, 1906.

The alliance of labor forces in national politics is reflected in local politics. The local Trades Councils have no power to control unions or support strikes, but they take action on public questions, and endeavor to shape the policy of municipal Councils. They have promoted municipal ownership and fair wages ordinances, and have nominated candidates for the municipal legislature. Within the past two years the latter activity has been taken up by local Labor Representation Committees, of which there are seventy-five, similar in organization to the National Committee. In 1906 it was decided to admit delegates from these local committees to the National meeting of the Labor Party, in case there is no conflict with a local trades Council. At the conference of the national body in 1906 the executive had the following to say of the local committees:

"We cannot pass from Elections without congratulating the local Labor Representation Committees, which are applying to municipal work the methods we have adopted in Parlimentary work, upon the splendid results of the municipal elections this year. The candidates run, and the gains resulting, have far surpassed the numbers of previous years, and, for the first time in the history of the Labor movement, its municipal gains appear to have exceeded those of either the Liberal or Conservative parties. These gains heralded the victories of the general elections."[1]

The methods and policies of these local committees may be seen from the following typical report made at the beginning of the year 1906 by the Manchester and Salford Trades and Labor Council:

"*Local Labor Representation Committee.*—In August last it was decided to endeavor to bring into existence a local Labor Representation Committee, and a circular was issued to the trade societies of the district inviting them to send representatives to a meeting, in which it was pointed out that we have at the present time in the Municipal Chamber men who, during the last few years have accomplished much in the direction of better conditions and pay for the poorer class of Corporation employees, and have, through the Fair Contracts Clause, largely secured that Corporation work shall only be given to firms paying standard rates and carrying out those conditions of employment which have been mutually agreed to be the better class of employers and the artisans and laborers themselves.

"The ratepayers of Manchester have in the past left municipal affairs largely in the hands of small employers, builders, and retired tradesmen: men whose interests have not led them to fully recognize the vast problems involved. But as increased municipal activity will be a feature of the future, greater employment by the Corporation must be looked forward to, that is, work to be done directly by them, which will necessitate an increase of practical men on the various committees, to see that work is economically carried out in the interests of the ratepayers, but at the same time to see that it is carried out under fair and equitable conditions.

"A second meeting was held, and the following resolution was adopted and sent to all the trade societies in Manchester, Salford and district:

> "That with a view to more adequate and effective representation upon the Manchester City and Salford Borough Councils, this delegate meeting hereby resolves that the societies represented be urged to contribute a sum equal to not less than 1d. per member to the Trades Council Fund, for the pur-

[1] Report, Sixth Annual Conference of the Labor Party, p. 6.

pose of assisting in the election of Labor candidates. It shall be a condition in the disbursement of this fund, that the E. C. of the Trades Council shall only make grants to such candidates as are prepared by their signature to give a pledge similar to that insisted upon by the National Labor Representation Committee. All candidates who desire to come within the provision of this resolution must be members of a *bona-fide* trade union, the Independent Labor Party or Social Democratic Federation.

"The results of their efforts were most successful, and many names have been added to those who on previous occasions have been announced as representatives who can be approached on matters relating to Labor.

"Further efforts will be put forth another year, when we hope to still further increase the number until labor can claim to have a fair share of representation in the municipal chambers of Manchester and Salford."

The program of the local Labor Representative Committees is limited still to local municipal conditions. The following, issued by the Sheffield Committee, is typical. It will be noticed that the clause relating to municipal ownership includes "any undertaking found to directly benefit the rate-payers," and that "trade union rates of wages" are desired in place of the "minimum rate."

*Sheffield "L. R. C." Municipal Programme*, 1905. (*Same for* 1906.)

WORKING CONDITIONS FOR CORPORATION EMPLOYEES.

1—A Forty-eight hours maximum week for all Corporation Employees.
2—A 25s. minimum weekly wage for all Corporation Employees.

HOUSING.

3—Erection of Cottage Property upon Corporation Lands at a rental within the means of a 25s. weekly wage.
4—A more vigorous application of Part III of the Housing Act, 1890.
5—The providing of Municipal Lodging Houses.
6—A Free Water Supply for Baths and "Closets" in all Cottage Property.

HEALTH.

7—Extension of Public Baths, with Free Water Supply, and a material reduction in charges for Bathing, and the provision of Free Open-Air Baths.
8—Free use of Baths by School Children during Summer Holidays.
9—The Corporation to be responsible for a Pure Milk Supply and the establishment of Infants' Milk Depots.
10—That the Corporation shall provide at least one meal per day for all School Children.
11—Special Inspection of School Premises,—Public and Private—also Medical Inspection of Scholars in Council and Private Schools.
12—Erection of a sanatorium for Consumptives by the Local Authority, with Free Treatment for the Poor, and for others payment according to ability.

CONTRACTS.

13—"Conversions" of Privy Middens into "Water Closets," the work to be executed by the Corporation.
14—Wherever possible, the Corporation to employ Labor direct, whether in Building Construction, or in Manufacture for its own uses, so as effectually to dispose of the Contractor, and shall take over and work any undertaking found to directly benefit the Ratepayers, and further, that in the "Fair Wages Clause," the Trade Union Rate of Wages to be substituted for the "Minimum Rate."

THE UNEMPLOYED.

**15—The provision of suitable work for the Unemployed at Fair Rates of wages.**

FINANCE.

**16—That the Corporation shall receive Loans as low as £10, at three per cent. Interest, subject to three months' notice of withdrawal. Interest to be payable every six months.**

The character and quality of the men elected to represent the labor element of the municipal Councils is partly determined by the fact that Councillors receive no compensation and that committee meetings and Council meetings are held in the day time. The amount of time required for these obligations during working hours makes it difficult or impossible for actual wage-earners to acccept the position. On this account nearly all the labor representatives have sources of income other than their daily wages. In Glasgow none of the labor members are actual wage-earners, and when it was desired to elect such a man to the Council he was assisted in setting up a small business in order to provide him a living. In this way labor is represented in the Glasgow Council by five manufacturers, three merchants, two officers of societies, one dentist, one surgeon, one solicitor, and one publican.

In other places, the salaried secretaries of trade unions have been elected, their unions sometimes furnishing them with an office assistant in order that they may give a part of their time to the duties of the municipal Council. Thus, in the London County Council, of the eleven labor representatives, seven are trade union officials. The labor delegation in Leicester includes 4 trade union officials, 4 officials of co-operative and other societies not labor, 3 wage earners, and a coal merchant and a small employer who recently were wage-earners. Eleven of these belong to the labor party and 2 are Liberals. In Birmingham there are three trade union officials, three wage-earners, and one building contractor. In Liverpool, there is one trade-union official and one Socialist. In Manchester there are 4 trade-union secretaries, 2 wage-earners, 1 architect, 1 civil engineer, 1 manufacturer, 1 clerk of works, 1 secretary of the Housing Council, and 1 miner's agent.

Not all of these so-called labor representatives are officially recognized as such by the new Labor Representation Committees or Labor Party. In Manchester, indeed, all of the 13 labor members have signed the pledge of the Labor party. But in Birmingham, four are members of the Labor party, while three have been nominated and supported by the Liberal and Tory parties. In Leicester 11 belong to the Labor party and 2 to the Liberal party. In Liverpool there are 2 members of the Labor party, while 3 Orangemen support them on Labor questions. In Glasgow, where old party lines are not drawn, there are no official representatives of the Labor party, but ten of the Labor men are in sympathy with that movement, while four of them are of the type of Labor politicians who play for the Labor vote in various ways. One of these was able to defeat the former chairman of the Tramways Committee and

to retire him from the Council on the ground of his refusal to consider the grievances of certain employees in the department.

### TRADE-UNION AND MINIMUM WAGES.

In each of the municipalities visited, the Council has adopted the policy of paying trade-union rates of wages and observing trade union hours of labor, and requiring contractors on municipal work to do the same. This is a policy first proposed in 1884 by the London compositors with reference to government printing, and it was first adopted in 1889 by the London School Board. Since that time the so-called "fair wages" principle has been accepted to a greater or less degree by six hundred and thirty-four local governing bodies in the United Kingdom,[1] including those in the localities of both the municipal and the private enterprises investigated for this report.

The London County Council has taken the lead in perfecting the details by which this policy is carried out. At first it was simply provided that the rates of wages and hours should be those recognized by associations of employers and trade unions, and in case there was no trade union the Council should fix the rates. This continues to be the form of the standing order in other places, but, since it leaves room for dispute and evasion, the Council, in 1897, began the publication of a list of wages and hours to be inserted in contracts. This list is settled by the Council on the recommendation of the Works Committee, and is revised from time to time "so as to keep it at all times as far as possible in accordance with the rates of wages and hours of labor for the time being recognized by associations of employers and trade unions and in practice obtained in London." Where there is no trade union the rates are those fixed and revised by the Council in the same way. This is the case also where there is a union not strong enough to secure an agreement with employers or generally to enforce its scale of wages. The alleged wages must be actually "in practice obtained," and this is determined by the investigation of the Works Committee. If actual wages are lower than those claimed or set up by the union, the Committee accepts those lower wages, as is done in the electrical trade, but in any case they are the wages paid by the best-paying, though not exceptional, private employers.

In case the work is done outside the radius of twenty miles from Charing Cross the rates are those of the district, which, however, must be submitted by the contractor for verification. The lists apply, with differences in details, to works of construction and manufacture, and to the supply of raw material or manufactured articles, including clothing, boots, hats, caps, and general stores. Contracts may not be sublet without the written consent of the Council under the hand of the clerk, and the contractor is held responsible for the sub-contractor. Full provision is made for pen-

[1] See Home Office Returns on "Contracts of Local Authorities (wages)," August 7, 1905, 307.

alties, recovery of liquidated damages, determination of the contract in case of breach, and payment by the Council to workmen of any difference between the amount authorized in the schedule and that paid by the contractor, with recovery from the latter. The rates of wages and hours are also those paid by the Council for similar work.

The publication of the lists of wages and hours by the London County Council is a detail in carrying out the policy of trade-union rates. Other municipalities have not gone to that extent, although they have adopted the same policy. Consequently, in other places the enforcement of the policy is not as precise as it is in London and there are more complaints of the evasion both by the municipal departments and by contractors. The Glasgow Council stipulates that "only firms paying the standard rate of wages or piece prices to all competent workers for all classses of work, whether under contract or otherwise, shall be eligible to estimate for and receive corporation contracts." Where there is no such standard the wages are those which are "generally recognized as fair in the trade." Outside Glasgow they are the "standard" or "fair" wages of the district or place.

Manchester requires the wages "recognized by the associations of employers and the local organized bodies of workers," and adds in the specification that "the Contractor does not and will not prohibit the workpeople of the Contractor from joining trade societies or continuing members of such societies."

Birmingham requires "the minimum standard rate of wages current in the district" in which the work is executed, but these instructions do not apply to purchases by any Committee or Contractor of materials, stores, patented or miscellaneous articles.

Leicester stipulates that "the rates of wages to be paid to, and the hours of labor, as well as the rules and conditions regulating the employment of, workmen and others engaged or employed in carrying out the contract, shall be such as are recognized by the employers and the respective trade unions in the town or district where such contract is to be executed; and where no such organization or organizations exists or exist, such rates of wages, hours of labor, and conditions of employment, as are, for similar work to that specified in the contract, generally paid or observed in the organized trades in the town or district nearest to the place in which the contract is to be executed."

Liverpool requires the wages "recognized and agreed upon between the trade unions and the employers," and St. Pancras those "mutually agreed upon by the associations of employers and employees, and as in practice obtain in the respective trades."

The policy of London and of the other municipalities is to follow rather than to lead private employers in fixing the rates of wages and hours. Investigation is first made of the rates actually obtained, and the result of this investigation is incorporated in the schedule. This involves continuous revision, and changes are made, upwards or downwards, according to the state of the labor market.

The following recommendation of the Works Committee, adopted by the Council, July 10, 1906, indicates the procedure:

"The rate of pay inserted in the Council's list for painters is 8½d. an hour, but the rate agreed upon between the association of employers and the trade union for painters employed in the ship painting industry is 9d. an hour. We recommend:

"That a statement be inserted in the Council's list of rates of wages and hours of labor that painters, when employed on ship painting in the Port of London, are to receive an extra ½d. an hour."

The foregoing procedure is apparently simple enough in cases where there is a substantial association of employers and a recognized trade union. Their negotiations, strikes, or lockouts, and the results, are practically official and are easily ascertained. But in some industries, especially the electrical and engineering industries, there is an increasing specialization of work. Recognized trades have been split into specialties, and it is possible to employ a semi-skilled man upon one or two operations at less than the trade-union rate for the all-round workmen. Sometimes the semi-skilled man is given a different title to designate his work so as not to bring him under the trade union rate. The overlapping of trades also makes it possible to put a man of a low-wage trade on a job claimed by a high-wage trade. Engineers and managers, both of municipal and private undertakings, endeavor to make economies of this sort, with the result that in respect to some of these undertakings there are grievances and criticisms from trade unionists that the department or company is not "fair" and is not paying the trade union rate. These are individual cases of dispute that it has not always been possible to investigate for this report. They are technical questions which, on account of jurisdictional disputes, unionists themselves do not always agree upon, but which the unions bring up for settlement as best they can. The fact that they have more influence in municipal Councils than in boards of directors, and the fact that the Councils have laid down the general principle that trade union rates shall prevail make it easier for them to get the trade union interpretation adopted in municipal undertakings than in private undertakings.

Since the trade union wages apply to contractors for municipal work as well as to municipal undertakings, they are supported and utilized by unions whose members, on account of the character of their work, are not employed by municipalities. Such unions as the boilermakers, boot and shoe operatives, and others are able to prevent firms paying less than their scale from supplying some of the municipal undertakings with their products. This, with the growth of municipal enterprise, is a factor of importance in strengthening such unions. A few younger and weaker unions also rely upon these wage clauses for support, but in their case the policy tends to weaken rather than strengthen them. It induces them to lean on outside help in a narrow field where wages are higher than what they can hope to get by their own efforts in the wider field of private work. This is shown in the Electrical Trades Union, described above.

In the case of unorganized laborers a minimum rate is established, either by the Council for all departments and contractors or by the several committees for each department. In the latter case the department has only the general standing order of the Council for its instructions, namely, to pay trade union rates. But for laborers, except in the building trades, there is usually no union or recognized standard. In the building trades, the men are sometimes organized in local unions and sometimes in branches of the national unions of laborers. In a few instances these have local agreements with an association of master builders. In other cases where the laborers are not organized, the Master Builders' Association establishes a local rate. Thus for this class of laborers there is always either a union rate agreed to by the employers or a recognized standard established by the employers. But building laborers including, as they do, the helpers of bricklayers, plasterers, and slaters, are a somewhat specialized kind of laborers, requiring a certain amount of skill, such as mixing mortar and nailing laths. They are subject also to the bodily risks and the irregular and seasonal employment of that industry. And, since their wages are always based on the hourly rate, they are 10 to 15 per cent. higher by the hour than the wages of general out-door laborers, and 20 to 30 per cent. higher than the wages of factory and yard laborers. When these hourly rates are taken as the standard and applied to the regular wages and steady employment of municipal undertakings, they result in earnings 10 per cent. to 30 per cent. higher than those of common laborers in private employment under similar conditions. Thus in Leicester there is no flat minimum established by the Council, but the hourly rate for employees of building contractors is accepted as the rate for other laborers. This rate was recently advanced to 6½d. per hour for bricklayers' and plasterers' helpers, and 6d. for general laborers and excavators, the advance being made on the decision of a referee appointed on the joint application of the union and the Association of Master Builders. The extra ½d. for the helpers was granted in recognition of their extra work and risk. The advanced rates were followed by the corporation as its minimum. In the Gas department the rate of 6d. is equivalent to 27s. for a week of fifty-four hours for yard laborers. Some of the best engineering firms, from the standpoint of the skilled workmen, pay their common labor 18s. to 20s. per week of fifty-four hours. Consequently, the minimum in the gas works is 35 per cent. to 50 per cent. higher by the week than the minimum rates paid by some private companies to laborers working under similar conditions.

The theory underlying the support of the minimum wage for municipal laborers is similar to that of trade unions in both skilled and unskilled occupations, and the effects are similar. It is not based on the character or needs of the work, nor is it related to the strength or endurance of the worker, but is supported by arguments drawn from the cost of living and the maintenance of a superior standard of life. It is not intended to be a maximum rate,

although it may result in becoming such. It is simply the minimum below which no workmen are to be paid, and the departments or the contractors are permitted to pay a higher rate if desired or necessary. This they do not do except to get men for special work, such as handymen, or helpers. So far as common ordinary labor is concerned, the minimum, in all cases investigated, has been placed high enough to secure an abundant supply of able bodied and active men. For this reason, departments and contractors do not find it necessary to pay higher rates in order to get enough of that class of laborers. On the other hand, except, perhaps, in Leicester and Manchester, the minimum has not been placed higher than the rates paid by some private employers to these superior individuals among the common laborers. In no case is it as high as the 30s. indorsed by the Trades Union Congress and the Labor Party. But private employers also pay to other laborers, not equally competent, lower rates than that which the municipal minimum permits. Consequently the true significance of the minimum is its contrast not with the highest nor even with the average, but with the lowest wages paid by private employers. These may be the rates at which laborers start to work, but above which higher rates are paid after a certain period of trial or experience. The significance of the municipal minimum is that the laborer starts at the minimum, a rate which in private employment they get only after a kind of promotion.

Or, the lowest rates paid by private employers with which comparison should be made, are those paid to older or less able-bodied men. These are paid according to a more or less close observation of the amount of work they can do or the less exacting position they occupy, compared with the able-bodied and most efficient laborers. If the calculation is close enough, the actual labor-cost of the work done is not greater for the able-bodied and not less for the unable. The municipal minimum, however, placed as it is at or above the standard for the able-bodied, is uneconomical if paid to the less able. Consequently, one effect has been that the new men taken on by the municipal departments do not include that class. This is particularly noticeable in positions where the work is easy or disagreeable, such as those of lamplighters, watchmen and scavengers. Those positions were formerly filled, at rates as low as 14s., by old men or incompetent or almost unemployable men, but they are now filled, so far as new appointments are concerned, by able-bodied men. Similar changes, though not so extreme, are found among yard laborers, car cleaners, motormen, conductors, and all classes of labor which formerly were hired at market rates, but now are hired at minimum rates. The men now employed could not have been secured at the former lower wages. For them the corporation minimum has not meant as great an increase in wages as the increase on the books would indicate, because they could command similar wages in private employment. In general, the minimum is not so much an increase of wages as it is a change of *personnel*. A different and superior class of men is employed, and whether they

perform a larger amount of work or render superior service depends on the kind of work and the management. In some positions, like that of yardmen, the amount may be greater and hence the labor-cost is less. In other positions, like that of watchman or signalman, the amount of work cannot be increased. The easier positions of this kind, however, are filled by older men transferred from other positions, who are looked upon as pensioners. The minimum wage policy would increase the cost of this quasi-pension system, unless exception is made, as in Manchester, of laborers "who, because of advancing years or defioient capacity, are retained at lower wages;" or, as in Glasgow where the minimum applies to "every able-bodied man."

Another feature of the municipal minimum compared with private employment is that it does not fluctuate with periods of depression. During the past ten years the extreme depression in industry and the large number of the unemployed in Great Britain have had a severe effect on the wages of laborers. Consequently the contrast of market wages with a given minimum rate was greater in 1905 than it has been under the partial recovery of business in 1906. At the same time the continual pressure of the labor element tends to raise the minimum, and where, as in Leicester or London, the rate follows the standards of the best-paying employers it is more promptly raised than in places where it depends on a resolution of the entire Municipal Council.

The minimum wage is strictly a wage for the common laborer. It does not usually affect the wages of men on special work, or handymen, since the minimum has not been placed higher than what such men can command except in times of depression. Neither does it apply to progressive positions, where the beginner serves either an apprenticeship to a skilled trade or a semi-apprenticeship in a line of promotion like that of greasers, drivers, and enginemen in a power house. Nor does it apply to the men working on the eight-hour shifts, who also are specialized workmen. It does not apply to boys or youths, but only to adult laborers. These require special consideration.

In Birmingham the minimum rate is established separately by the committee for each department. The rate in the gas department is 23s., adopted in 1900, and the union is moving for an advance to 25s. The practice of the unions in playing one department against another in the matter of wages has led to the appointment of a joint committee, of two members from each employing committee, to deal with the minimum wage. This arrangement is approved and advocated by the labor members of the Council. In private employment the standard of the organized building laborers is 6½d. per hour, or 29s. 3d. for fifty-four hours. Navvies, unorganized, get 5d. The firm of Cadbury's, famous for its treatment of labor, pays 20s. to 24s. for common labor. Another large firm pays the same. At the other extreme, and lowest in the district, a great carriage works pay 18s. to 20s. for fifty-four hours. In general, the run of wages among unorganized laborers is 18s. to 23s.

The minimum in the gas department is 15 per cent. higher than the minimum paid by "model" private employers, and 25 per cent. higher than that paid by others.

At Manchester the first movement to adopt the minimum scale for unskilled labor was made in 1905, and the resolution set the figure at 25s., to take effect April, 1906. The minimum prior to that time had been 23s. in the gas department, 22s. in the electrical department, and lower rates in other departments. Building laborers, who are organized, get 6d. an hour, or 26s. 6d. for fifty-three hours. The large engineering establishments pay 18s. to 20s. for fifty-two and one-half hours for inside laborers. The corporation minimum is 25 per cent. to 40 per cent. higher than that in private employment, augmented by extra rates for overtime and by holiday pay.

The minimum wage of 21s. in Glasgow, established by the Council for contractors and all departments, is the lowest in the list of municipalities visited. This conforms to the fact that in Glasgow the general level of wages is low. Speaking even of a skilled trade like that of the engineers, a statistical authority says: "By simply crossing the border (into England), a man gets 3s. more." Glasgow is the port to which large numbers of Irish peasants and laborers migrate, and these, together with hundreds from the crofts and the fisheries, augment the supply of unskilled labor, especially in winter. There is no organization among this class of workers, and even in the skilled trades the relatively low scales of union wages are not enforced. The lowest wages for able bodied men are those of the freight handlers—"goods warehousemen"—employed by the railroads. These vary from 15s. to 18s. a week. Foundry laborers get 17s. Yard men on the Clyde get 17s. to 19s., a few as low as 16s.; engineers' laborers and helpers, 17s. to 18s. Navvies are paid at the rate of 24s. to 30s. for fifty-four hours, but on account of their irregular work their earnings are much lower. The same is true of building laborers at 5d. to 6d. per hour, or 23s. 10d. to 26s. per week of fifty-two hours. Compared with the wages of those having regular employment, the corporation minimum is 15 per cent. to 33 per cent. higher than the corresponding wages in private employment.

The level of wages in Liverpool, like that in Glasgow, is depressed by the immigration of Irish laborers. The corporation has not named a definite figure, but the departments during the past two or three years have accepted the rate formerly established by the unions of building laborers and the National Amalgamated Union of Labor at 24s. Since the building laborers' union has dissolved, their wages range from 21s. 6d. to 25s., for forty-nine and one-half hours. The minimum set by the Builders' Association is 21s. Pavior's laborers receive 21s. to 24s. for fifty-five hours; railroad freight handlers start at 18s., and employees of the Mersey Dock Board at 21s. Plate layers (section hands), get 17s. 10d. to 22s. Foundry laborers get 17s. Yard laborers in the gas works begin at 18s. In factories, common laborers receive 18s. to 21s., but handy

men or semi-skilled laborers, such as helpers, are paid higher wages. The organized platers' helpers on ship repairing receive 24s. to 27s., and the organized dock-workers are paid for their irregular work at the rate of 30s. to 48s. for fifty-four hours; other dock workers at the rate of 24s. The corporation minimum of 24s. is 15 per cent. to 30 per cent. higher than the corresponding minimum in private employment, besides one week holiday on pay.

The policy of the London County Council is, not to establish a flat minimum for laborers, but to determine through its Works Committee the prevailing rates paid by private firms for all classes of laborers and mechanics and then to settle each rate on that basis for the several departments and contractors. This requires continual investigation and revision, but the rates established are those paid by any considerable portion of the best-paying employers. The lowest rate paid to laborers is 6d. an hour for stablemen, laborers in the engineering trade, motor cleaners in the car sheds and greasers in the power house. Next are armature winders' helpers at 6½d., and navvies, building laborers, paviors' laborers and magnet winders at 7d. The hours are fifty-four, except in the building trades, where they are fifty. In one case the rates paid by the Council are higher than those required to be paid by municipal contractors. Carmen employed by contractors receive a minimum of 26s., and those employed by the Council a minimum of 28s. In all other cases the schedules provide the same wages to be paid by the Council and by contractors on municipal work.

*Appendix—Trade Union Wages.*

London County Council: Standing Orders, May, 1906. pp. 5, 6, 11 to 22.
Glasgow: Corporation Diary, 1905-1906. pp. 136, 137.
Manchester: Leaflet, "Contracts for Works."
Birmingham: Diary, 1905-1906. pp. 122, 123 (General Instructions to Committees).
Leicester: Year Book, 1904-1905. pp. 88, 89 (Conditions of Contracts).
Liverpool: Standing Orders, 1905-1906. pp. 31, 32.
St. Pancras: Home Office Returns, p. 41.
Newcastle: Home Office Returns, p. 16.
Sheffield: Home Office Returns, p. 19.
Norwich: Home Office Returns, p. 17.
Dublin: Home Office Returns, p. 19.

## INDIVIDUAL CONTRACTS.

The relation of trade unions to the several enterprises depends largely upon the contracts which the management makes with individual employees. These contracts are governed by legislation enacted in the years 1875 and 1876, dealing with trade unions, conspiracy, and protection of property. Under the law as it stood prior to 1875, a breach of contract on the part of the workmen was a criminal as well as a civil offence. On the strong representation of the trade unions and friends, the Government in 1875 decided that, in order once and for all to avoid the idea of the criminality of trade unions, the Criminal Law Act of 1871 should be repealed, and a new bill should be enacted into law providing in less ob-

jectionable ways for the protection of person and property during trade disputes. This law, known as the Conspiracy and Protection of Property Act, 38 and 39 Vict., Cap. 86 (1875), abolished the law of conspiracy in trade disputes, and limited the criminality of trade unions to acts which if done by one person would be a crime. The act then proceeded to distinguish between peaceful picketing, which henceforth should be free of criminal taint, and those acts of violence, intimidation, "rattening," etc., which should be punished by fine or imprisonment. The objection being raised that the repeal of the conspiracy laws would endanger the gas and water supplies of towns was met by special clauses. These two enterprises were excepted from the general repeal, and a breach of contract with a Council or private company which the workmen had reason to know would deprive a place of gas or water was made a criminal offense, with a fine of £20 or three months' imprisonment. In other words, employees in gas and water undertakings were left in the same position as regards conspiracy as that which they occupied prior to 1875. The section of the act which made this exception against gas and water employees also contained a clause requiring the municipal authority or company to keep posted a printed copy of this section, and under this requirement there was found in all of the gas enterprises visited, both municipal and private, the following large poster:

38 *and* 39 *Vict., Cap.* 86. *Conspiracy and Protection of Property Act,* 1875.

SECTION 4.—Where a person employed by a Municipal Authority, or by any Company or Contractor, upon whom is imposed by Act of Parliament the duty, or who have otherwise assumed the duty of supplying any city, borough, town, or place, or any part thereof, with Gas or Water, wilfully and maliciously breaks a contract of service with that Authority or Company or Contractor, knowing or having reasonable cause to believe that the probable consequences of his so doing, either alone or in combination with others, will be to deprive the inhabitants of that city, borough, town, place, or part, wholly or to a great extent of their supply of Gas or Water, he shall, on conviction thereof by a court of summary jurisdiction or on indictment as hereinafter mentioned, be liable either to pay a penalty not exceeding Twenty pounds, or to be imprisoned for a term not exceeding Three months, with or without hard labor.

"Every such Municipal Authority, Company, or Contractor as is mentioned in this section shall cause to be posted up, at the gas-works, or water-works, as the case may be, belonging to such Authority or Company or Contractor, a printed copy of this section in some conspicuous place where the same may be conveniently read by the persons employed, and as often as such copy becomes defaced, obliterated, or destroyed, shall cause it to be renewed with all reasonable despatch."

"If any Municipal Authority or Company or Contractor make a default in complying with the provisions of this section in relation to such notice as aforesaid, they or he shall incur on summary conviction a penalty not exceeding £5 for every day during which such default continues, and every person who unlawfully injures, defaces, or covers up any notice so posted up as aforesaid in pursuance of this Act, shall be liable on summary conviction to a penalty not exceeding 40s."

It will be noticed that under this section the mere fact of quitting work is not enough to render the workman criminally

liable—he must quit work in violation of a contract. If he had no contract, or if his contract had expired, he could quit work without fear of indictment for conspiracy. But the courts held that where there was no formal contract for a specified period there was an implied contract to work during the interval between pay-days, which was usually one week. A union of gas workers could order a strike to take effect after their week's wages were paid, and thus its members would escape the criminal penalties, and they were not required to give notice of this intention to quit unless they had entered into a contract with that stipulation. The contracts were usually verbal; consequently the employees were bound only to a week's service at a time. The first gas authority that conceived the idea of extending the period and requiring a written contract was the South Metropolitan Gas Company of London. This was done in the summer of 1889, after the union of gas workers had secured the eight-hour day without a strike. The company at that time offered to its employees contracts running for twelve months, or for a shorter period in the case of winter men, the contracts to be signed as individuals and the consideration being a share in the profits of the company. About 1,000 of the yard men and mechanics signed the contracts, but the stokers' union forbade its members to sign. Their objection was that the workmen would be brought under the Conspiracy Act and the union could not order a strike while the contracts were in force without subjecting its members to criminal prosecution. It was the intention of the company by means of these contracts to break up the gas workers' union, but they were able to make it appear to the public that the union was opposed to profit sharing, although its real opposition was against the twelve-month contracts.

In a memorandum annexed to the contract, but not forming a part of it, the company promised that a man might leave before the end of the twelve months provided he notified the engineer of the station and the engineer in his discretion could give or withhold permission to quit. The design in this clause was to permit individuals to leave but to forbid an organized movement to quit work by holding over the men the criminal penalties of the Conspiracy Act. When the union discovered that three of its members had signed the contract, it demanded their dismissal and afterwards demanded that all men who had signed should be dismissed. The union sent in a week's notice, in conformity with their implied terms of contract, and in the interval the company was able to supply their places. At the conclusion of the strike and the defeat of the union some of the union members were taken back, but a public utterance of the secretary of the union that "the next time" they would not give the week's notice led the company to insert an additional clause forfeiting the contract if the workman became a member of the union. The clause reads as follows:

"1. The said.....for the South Metropolitan Gas Company agrees to employ the said.....who says he is not a member of the Gas Workers' Union, for a period of.....months from

the date hereof at one or other of the stations of the said Company, if he shall remain sober, honest, industrious, and performs the work allotted to him, and shall not at any time during the said period become a member of the said Union."

This clause was dropped after a few years, and the contract remains as it was when first adopted in 1889. The present form is as follows:

*South Metropolitan Company.*

| GENERAL AGREEMENT. | *Wage No.* | *Profit-Sharing No.* |
|---|---|---|
| | | |

MEMORANDUM OF AN AGREEMENT made the..... day of.....190.... Between..... for and on behalf of the South Metropolitan Gas Company, of No. 709, Old Kent Road, in the County of Surrey, of the one part, and .....of the other part.

1. The said.....for South Metropolitan Gas Company agrees to employ the said.....for a period of.....months from the day of the date hereof at one or other of the Stations of the said Company, if he shall remain sober, honest, industrious, and performs the work allotted to him.

2. The said.....agrees to serve the said Company for the said period of.....months in whatever capacity he may from time to time be employed by the said Company at the current rate of wages applying to such capacity.

3. The said.....agrees to obey the orders of the Foreman in charge.

4. The hours of working for yard men to be 54 hours per week.

5. The Company undertakes that during the continuance of this agreement the different rates of wages in force at the date hereof, and which, under Clause 2, may become payable to the said..... .....shall not be reduced.

6. The said.....to be entitled to the benefit and be bound by the conditions of the Co-Partnership Rules so long as he shall continue in the service of the Company under Agreement.

As witness the hands of the parties,

No obstacle will be thrown in the way of any man engaged under the above Contract who may wish to leave the Company's employment before the expiration of the period of service therein agreed for, provided he shall notify such wish to the Engineer of the Station at which he may for the time being be employed, and on receipt of such notice the Engineer shall, in his discretion, consider whether the services of such a man can be dispensed with without detriment to the Company, and, if so, permission will be given at the expiration of the usual week's notice.

Section 1, of the above contract was as follows during the years immediately following the strike in 1890:

1. The said.....for South Metropolitan Gas Company agrees to employ the said.....who says he is not a member of the Gas Workers' Union, for a period of..... months from the day of the date hereof at one or other of the stations of the said Company, if he shall remain sober, honest, industrious, and performs the work allotted to him and shall not at any time during the said period become a member of the said union.

The only other gas undertakings that have adopted the long term contracts in order to bring employees under the terms of the Conspiracy Act are four companies—South Suburban, Commercial, Chester, and Newport—(which have copied the profit-sharing plan of the South Metropolitan Company), and the gas department of Glasgow, which has adopted a bonus scheme. The Glasgow contract is copied in its essential clauses from that of the South Metropolitan Company. It was adopted in 1899, following a strike of gas workers at the Dalmarnock Station. Some of the strikers at that time were prosecuted under the Conspiracy Act, and although they were serving only under the implied contracts requiring a week's notice they were fined in amounts varying from £2 to £7. The long-term contracts were thereupon adopted by the Gas Committee. They are signed only with men who have been employed in the department a year or more, the number at present being about 1,000. The bonus, or consideration secured on signing, is 1s. a week, paid in cash at the termination of the contract. This is equivalent to 3 or 4 per cent. addition to the wages, compared with 9¾ per cent. paid by the South Metropolitan Company. The form of contract is the following, section three applying to hand-stoking and not applicable since the substitution of mechanical stokers:

*Glasgow Gas Works.*

MEMORANDUM OF AGREEMENT made by and between.....
.....for and on behalf of the Lord Provost, Magistrates, and Council of the city and Royal Burgh of Glasgow, acting under "The Glasgow Corporation Gas Act, 1869," and amending Acts (hereinafter called "the Corporation"), of the one part, and.....thereinafter called "the Workman"), of the other part.

1. The said....., for and on behalf of the Corporation, hereby agrees to employ the workman for a period of[1]

[1] Usually 6 to 12 months.

.....months from the date hereof, at one or other of the Gas works of the Corporation, if he shall remain sober, honest, industrious, and able to do the work allotted to him.

2. The workman hereby agrees to serve the Corporation for the period specified in article first hereof, in whatever capacity he may from time to time be employed by the Corporation, at the current rate of wages applying to such capacity.

3. Eight retorts drawn and charged by hand per hour to constitute the work of two men.[2] If the retorts are drawn by machinery, sixteen

[2] Does not apply since substitution of mechanical stokers.

charged per hour to be considered equivalent work. In the event of the retorts being both drawn and charged by machinery, forty retorts drawn or charged per hour shall constitute the work of each machine. Should a greater or less number of retorts be drawn or charged per hour, the wages paid shall be increased or diminished in accordance with the scale of wages in force at the date hereof.

4. The workman agrees to obey the orders of the Foreman or Manager in charge at the particular works at which he may be employed.

5. The Coporation undertake that during the continuance of this Agreement the different rates of wages in force at the date hereof, and which, under article second hereof may become payable to the workman, shall not be reduced.

6. If the Workman faithfully fulfills his part of this Agreement the Corporation shall at the expiration thereof, pay to him a bonus equal to one shilling per week for the whole period during which he has so served the Corporation. In witness whereof this Agreement is subscribed by the parties hereto, both at Glasgow, on the .....day of.....One thousand.....hundred and.....before the Witnesses undernamed and designed and hereto with them subscribing.

Witness.

Witness.

NOTE.—In the event of any workman engaged under the foregoing Agreement wishing to leave the service of the Corporation before the expiration of the period of service therein stipulated, in order to fill another situation, he shall notify such wish to the Manager of the Station at which he may for the time being be employed, and, on receipt of such notice, the Manager shall in his discretion consider whether the services of such workman can be dispensed with, without detriment to the Corporation, and, if so, he may then give such workman permission to leave at the expiration of the usual fortnight's notice.

None of the other gas enterprises have adopted the long-term contracts, but there are two corporations, which, while paying wages weekly, make contracts which require a notice in writing fourteen days in advance of quitting work. These are Leicester and Birmingham.

*Gas Workers' Contract, Leicester.*

MEMORANDUM OF AGREEMENT made the..... day of.....One Thousand Nine Hundred..... Between ..... of..... Herein called "The Servant" of the one part, and The Mayor, Aldermen, and Burgesses of the Borough of Leicester, hereinafter called "The Corporation," by Alfred Colson, the Engineer and Manager to the Gas Department of the said Borough, of the other part.

1. The Servant, in consideration of the Agreement herein contained on the part of the Corporation, doth hereby agree to serve the Corporation; and the Corporation do hereby agree to employ him as their laborer and hired servant, in the business of making Gas at their works, from the date hereof until this Agreement shall be put an end to by either the Servant or the Corporation giving to the other of them fourteen days' notice in writing, and if after the expiration of such notice the Servant shall continue to be employed by the Corporation, he shall be held to be their Servant at will.

2. The Servant doth hereby also agree, diligently and faithfully, according to the best of his skill and ability, to employ himself in the said service during the usual and customary hours of labor each and every day during the continuance of this Agreement; and in such service, and all matters connected therewith, will obey all the lawful orders and directions of the Engineer, and Manager of the Corporation, or his deputy for the time being, having the oversight and control of the said Servant, and in default of such obedience, or in the event of the Servant absenting himself from or neglecting the work or service of the Corporation, or if he shall be in a state of intoxication, or shall in any other way misconduct himself during the hours of such service, he may, any other Agreement notwithstanding, be summarily dismissed.

3. And the Corporation do hereby agree to pay to the Servant the weekly wages of.....(being at the rate of.....per day of eight hours) at the end of each week during which he shall continue in the service of the Corporation, but subject to a proportionate deduction at the daily rate aforesaid, for such time, if any, as the Servant shall be absent from the said service from any cause whatever.

Witness to the Signature of the above-named Servant:

Witness to the Signature of the Engineer and Manager:

*Gas Workers' Contract, Birmingham.*

MEMORANDUM OF AGREEMENT made the..... day of.....One Thousand Nine Hundred and..... Between ..... of..... "The Servant," of the one part, and The Mayor, Aldermen, and Citizens of the City of Birmingham, hereinafter called "The Corporation," by.....Engineer to the Gas Department of the said City, of the other part.

1. The Servant, in consideration of the Agreements herein contained on the part of the Corporation, doth hereby agree to serve the Corporation; and the Corporation do hereby agree to employ him as their laborer and hired servant, in the business of making Gas at their Works, from the date hereof until this Agreement shall be put an end to, by either the Servant or the Corporation giving to the other of them fourteen days' notice in writing, and if after the expiration of such notice the Servant shall continue to be employed by the Corporation, he shall be held to be their Servant at will.

2. The Servant doth hereby also agree, diligently and faithfully, according to the best of his skill and ability, to employ himself in the said service during the usual and customary hours of labor each and every day during the continuance of this Agreement; and in such service, and all matters connected therewith, will obey all the lawful orders and directions of the Engineer of the Corporation, or his deputy for the time being, having the oversight and control of the said Servant; and in default of such obedience, or in the event of the Servant absenting himself from or neglecting the work or service of the Corporation, or if he shall be in a state of intoxication, or shall in any other way misconduct himself during the hours of such service, he may, any other agreement notwithstanding, be summarily dismissed.

3. And the Corporation do hereby agree to pay to the Servant the weekly wages of.....(being at the rate of..... per day of eight hours) at the end of each week during which he shall continue in the service of the Corporation, but subject to a proportionate deduction at the daily rate aforesaid (which the Corporation are hereby authorized to make) in the event of the Corporation not requiring the service of the Servant on Sunday in any week, and for such time, if any, as the Servant shall be absent from the said service for any cause whatever, and subject to a proportionate increase at half the daily rate aforesaid, for all the work done by the Servant on Sunday between the hours of 6 a.m. and 6 p.m.

4. The contributions of subscriptions of the Servant to the "City of Birmingham (Gas Department) Sick and Funeral Allowance Society," will be deducted from the weekly wages aforesaid in accordance withm the Rules of the said Society.

Witness to the Signature of the above-named Servant:

Witness to the Signature of the Engineer:

The Sheffield Company reaches the same result, not by a contract but by a notice posted in the works requiring fourteen days' notice before the stoker can leave the company's employ. This applies only to those who have worked fourteen consecutive shifts, as will be seen in Rules 15 and 16 of the following notice:

*Sheffield United Gas Light Co.*
*Neepsend and Effingham Street Stations.*
*Rules to be Observed by Retort House Men.*

1. All workmen engaged in or about the Retort Houses, who are on 8-hour shifts, are included in these Rules.

2. Each stoker (On Hand Stoking) is required to draw and charge 28 mouthpieces during his shift.

3. Stokers and lid men are required to keep the mouthpieces and ascension pipes clean, and in working order, on the retorts allotted to them during the shift; and must rammel the same at every charge.

4. Stokers and lid men must take all the precaution necessary to prevent spongy pieces of coke, shale, or cannel coke, getting mixed with the coke shot down for sale.

5. Retort lids to be properly slackened, and a lighted torch applied before the lids are opened.

6. Each fireman to attend to 9 open fires, and to clinker 6 during his shift. On the Regenerative Furnaces the Fireman will clinker the fires allotted to him, and prick them up as often as may be necessary; pan out and wheel the ashes outside the Retort House where directed, and leave the ashpans clear of ashes and full of water at end of each shift; firemen must remove the water from the ashpans before clinkering the furnaces.

7. Each coal filler is required to fill 16 tons of coal during his shift (except for No. 2 House, at Effingham Street, where the quantity is 11 tons), and put it down in the proper position for the Stokers to fill the scoops.

8. Machine men must keep their Machines clean and in good order, properly draw and charge the retorts, and report to the Foreman any defects in the Machines, and rendered all necessary assistance to the fitter repairing same.

9. Coke men must thoroughly quench the coke before it is taken out of the Retort House; on Hand Stoking, are required to wheel away the coke from 3 Stokers to the position as directed by their Foreman; and on Machine Stoking are required to fill up the fires as often as necessary, with cannel or other coke, and wheel the surplus to the tips as directed by the Foreman.

10. Elevator men are required to keep the engines, elevators and conveyors clean and in good order; to regulate the supply of coal to the breakers; keep the hoppers full of coal, and report any defect to their Foreman.

11. All men must assist in any way required in cases of emergency.

12. Men are not allowed to leave the Works without permission during their respective shifts.

13. Work on Sunday, will, as a rule, be stopped between 5 a.m. and 1 p.m., and when possible on the afternoon shift also.

14. All men to be punctual to the time for beginning work; and any man absenting himself without satifactory reason, or being on the Works in an intoxicated state, or breaking any of the foregoing rules, or not doing his work to the satisfaction of the Superintendent of the Works, will be liable to instant dismissal.

15. Fourteen days' notice, in writing, is required from Retort House Men who have worked 14 consecutive shifts, before they can leave the Company's employ; and the same notice will be given by the Company, except in the cases specially mentioned in these rules.

16. If any man continues working after the 14 days' notice has expired, he may leave, or be discharged at any time, without any further notice. This arrangement shall only apply for a period of four months after the expiration of the 14 days' notice, and if a man continues working after the expiration of such period of four months, he shall then be entitled to receive, and be liable to give 14 days' notice under Rule 15.

July 1st, 1903.

By Order,
JOHN W. MORRISON, *Engineer.*

The objects to be secured by sections 15 and 16 of the foregoing notice turn upon the fact that about December the full limit of consumption has been reached, and also the full staff of men

employed. By the beginning of the New Year as daylight increases less gas is consumed, and the custom of the gas company is to then give certain men fourteen days' notice to break their contract of service in accordance with law. It is usually the last comers or the last men set on that are given notice, and Rule 16 is not to get behind the Conspiracy Act of 1875, but rather works in the men's favor, because as very often happens when the men's legal notice has expired if the hours of daylight have not increased as rapidly as anticipated they are found employment from day to day, sometimes only for a day or two and sometimes for weeks. In order to safeguard the interests of the men the clause means that if under these circumstances a man by chance has been working for four months from day to day he may count himself a regular employee, and entitled to give or receive fourteen days' notice before his contract can be broken.

The remaining two gas undertakings, those of the Manchester Corporation and the Newcastle Company, do not enter into any written contract with individuals nor impose any regulation respecting the term of employment. The agreement is only verbal and is governed only by the common law and the Conspiracy Act of 1875. This would require on the part of the workman one week's notice of his intention to quit in order to relieve him of the criminal liability of the act. It is the custom in Manchester to give a fortnight's notice to men working in the retort house and seven days to all other workmen.

## TRAMWAYS.

The two private tramway companies in Dublin and Norwich require a surety bond or a deposit on the part of their motormen and conductors, but these are not required by any of the municipal corporations. The Norwich company requires a deposit of £2 and the wages of the current week as security for the performance of the contract. The company retains the right of discharging the employee at any hour without stating any cause, but requires one week's notice in writing on the part of the employee subject to forfeiture of the deposit and current wages if such notice is not given. One pound is also retained from the first week's wages as security for cost of uniform.

The Dublin company requires a bond, with one surety, the amount to be determined at the time of signing the contract. If the employee leaves without giving fourteen days' notice the bond is recoverable, but the company may dismiss him at any time without notice.

Neither bonds nor notice of intention to quit work is required by the municipal corporations. In Manchester there is no written contract, and employment is by the hour, so that the employee can quit at any time without notice and without forfeiting his wages. The Manager can discharge him at any time, without notice. This is true also in Liverpool and Glasgow, but the London County Council requires one day's notice on each side. The only

financial security is the current week's wages as they accrue up to pay-day, and these are security, not against quitting work, but against damages resulting from breach of rules. In Glasgow and Liverpool the employee is required to become a member and to contribute to the benefit societies that provide against sickness, accident, death, or superanuation. Copies of these contracts are given herewith:

*Norwich Electric Tramways Company.*

Form of Contract for Motor-Men and Conductors.
Contract No.....

THIS AGREEMENT made and entered into by and between the Norwich Electric Tramways Company and..... hereinafter referred to as the said Employee:.....

WITNESSETH, that the said.....agrees to serve the said Company, and the said Company agrees to employ him to serve it, in either of the capacities above mentioned to which he may be assigned, and to pay him for such services the same scale of remuneration as is paid to others employed in a similar service of the said Company, the conditions of this Agrement being as follows:

*First.*—That such service is to commence when the said Employee shall be assigned to duty by the said Company, after he is reported as competent, and to be continued for such times as employment may offer on the Cars of the Company or until terminated in the manner hereinafter provided.

*Second.*—That in either of the capacities in which he may be employed he will faithfully perform all the duties of the position, and will be bound by and fully comply with all the Rules and Regulations now existing, as also any which may from time to time be prescribed by the Company, all of which are intended to be incorporated in this agreement.

*Third.*—That if the said Employee shall serve the said Company in the capacity of a Conductor, he will become responsible for all the Property in his charge, and will see that all Passengers boarding or leaving his Car are safely received or landed before giving the signal to proceed; and, further, will faithfully and honestly use the "Bell-punch Register," "Way-bill," or such other device as may at any time be adopted or directed to be used by the Company for the collection and recording of fares, and will account for and pay over to the said Company (as often as the Rules of the Company require) the full amount of fares so collected and recorded, it being distinctly understood and agreed that the difference in the number of tickets issued to him and the number remining in his possession shall be taken as the true number of fares received by him; provided also that this number shall agree with the Indicator in the said "Bell-punch," unless upon subsequent examination it shall be found that the said Indicator is not in perfect order, or that it has been tampered with while in his possession; provided always that in the event of there being any discrepancy between the difference in the numbers of the Tickets issued to the Employee and the number remaining in his possession, and the numbers of the Tickets issued as shown by the Indicator in the Bell-punch, it is hereby expressly agreed and declared that whichever number of Tickets so shown to be issued shall be the larger (whether shown by such difference as aforesaid or by the Indicator in the "Bell-punch") shall be considered the number for which the Employee shall be accountable to the Company. In the event of any damage to a "Bell-punch or Register" while in his possession, or in the event of his failure to return the same to the Company, he hereby agrees to pay for any damage if it is injured, or the full value of it if it is not returned. The Employee shall serve the Company on any part of their system as their Manager or Foreman may from time to time direct.

*Fourth.*—That if the said Employee shall serve the said Company in the capacity of Motor-man, he will become responsible for all property placed under his charge, and will use all the care and skill necessary to avoid accidents of any kind.

*Fifth.*—That this Contract may be terminated on behalf of and by the said Company, and the said Employee may be discharged at any hour, by written or verbal notice from the Company, or its Engineer and Manager, or authorized officer, without stating cause for such discharge, or by the said Employee giving seven days' notice in writing of his desire to leave the service of the Company; during which seven days the Company shall have the use, at its option, of such services as heretofore, under penalty for the non-performance thereof.

*Sixth.*—The Employee, if a Conductor, will on the signing hereof pay to the Company Two Pounds, to be retained by the Company together with any such interest thereon as is hereinafter mentioned, and with all wages for the current week, as security for the due discharge of his duties and for the due accounting for and paying over to the Company all money received by him for or on behalf of the Company, and for the due observance by him of the Rules and Regulations aforesaid and all alterations thereof, and for the payment of all damages and loss occasioned to the Company or their property, and all damages, fines, and penalties to which the Company may become or be made liable by reason of anything wrongfully or negligently done, omitted, or suffered by the Employee, and for the payment of all moneys for which he is made liable and the satisfaction of all things for which he is made responsible by any of the Rules and Regulations, or any alterations therein.

*Seventh.*—That the Company may retain the sum of One Pound from the wages of the Employee as security for the cost of the Uniform, for a period of one month from the date of the receipt of such money, and if at the end of that time the Employee is pronounced efficient by the Company's Manager, and his conduct is satisfactory and he still remains in the employ of the Company, the same shall be returned to him less an amount equal to a payment of One Shilling a week for the period he has been in the employ of the said Company, which amount shall be received in part payment of the two-thirds cost of Uniform to be paid by him at the rate of one shilling per week.

*Eighth.*—That in case of a breach of any of the conditions of this Agreement or the said Rules and Regulations, or any alterations therein, the said Employee shall be liable to the said Company for all loss or damage sustained by or through such breach, whether the same could be reasonably anticipated or not; the Company shall also be entitled to retain the whole of the said sum of Two Pounds and any interest thereon and the Employee's wages for the current week as liquidated damages for such breach. In any other case the amount for the payment or satisfaction of which the said Two Pounds and any interest thereof and the Employee's wages for the current week are hereby made a security may also be retained out of the same sum and interest and wages by the Company as liquidated damages.

*Ninth.*—It is distinctly understood by the said Employee that the object of this contract is to protect the said Company from loss, whether through injury to its own property or business, or through claims for damages by third parties, for which the said Company may be or become liable through or by reason of any malice, neglect, carelessness, unskillfulness, or dereliction of duty on his part, either in violation of the Rules and Regulations of the Company or otherwise; and he hereby agrees that he will become responsible for, and will pay to the Company, any damages or loss that may occur through any of such causes, or otherwise this Agreement shall cease and terminate as from the date of any such injury or damage being caused, or of any such act of malice, neglect, carelessness, unskillfulness or dereliction of duty on the Employee's part as aforesaid, as the case may be, without prejudice however to any claim the Company may have against

the Employee under the preceding clauses of this Agreement. In the event, however, of this Agreement being terminated under the provisions of this clause, the Company shall be deemed to release the Employee from all liability which he would otherwise have incurred under this clause; and the said Employee further agrees that as regards any wages which may be or become due, and which shall be required to meet any claim or claims for which he may have become liable under this contract, the said Company shall be and is hereby authorized and instructed to take out of such wages, as may be or become due, the amount required to meet such demand, and to apply the same toward the liquidation of such claim or claims.

In witness whereof the said Norwich Electric Tramways Company has caused these presents to be subscribed by its Engineer and Manager, and the said.....
hath hereto subscribed his name this.....day
of.....nineteen hundred and.....
In the presence of

Traffic Manager.
Engineer and Manager.

*The Dublin United Tramways Company.*

KNOW ALL MEN that we.....and
.....are jointly and severally bound to the Dublin United Tramways Company in the sum of.....
Pounds sterling, to be paid to the said Company, for which payment we and each of us bind ourselves, our heirs, executors, and administrators, and every one of them, by these presents sealed with our and each of our respective seals.

Whereas.....has expressed a desire to become a.....of Street Cars in the service of the said Company, and the said Company have consented to accept the services of said.....on the terms of his entering into a Bond with one surety in the above-mentioned sum of.....Pounds. Now, the condition of the above-mentioned Bond is such, that if the said.....shall not wilfully disobey the orders of any of the superior Officers of said Company, so as to cause any interruption to the Traffic, and if the said .....shall honestly and faithfully discharge his duty as such.....and shall not leave the service of the Company without the consent of the Manager, for the time being of said Company or until the expiration of fourteen days from the time when he shall have given notice of his intention to leave the employment of the said Company, then the above-mentioned Bond shall be void, otherwise the same shall remain in full force, and the entire of said sum of.....Pounds shall be recoverable against the said.....and.....
or either of them, or either of their heirs, executors, or administrators, as liquidated damages.

As witness our hands and seals this.....day of.....
190..... .....
Signed in the presence of.....

And further I do hereby agree that should I become or continue a servant of the above Company, so long as I shall continue in the employment of the above Company, the Manager, or other Officer of the above Company duly appointel, shall be at liberty to discontinue my services, or dismiss me at the end of, or during any day whatever without any previous notice whatever, upon paying me the current day's wages and no more except any wages that may be at the time due to me on account of any work done during the week previous to the day of such discontinuance or dismissal.

Dated this.....day of.....190....
.....
Signed in the presence of.....

*Liverpool Corporation Tramways.*

I, .....of.....
.....in consideration of being taken into the employ of the Liverpool Corporation Tramways as a..... hereby agree with the Liverpool Corporation to conform to all the Rules and Regulations for the time being of the Liverpool Corporation Tramways, and to submit to the penalties for the breach of the same, and I agree to become a member of the Liverpool Corporation Tramways Benefit Society, and I authorize and direct the Corporation to deduct from my weekly wages the amounts which shall from time to time become due from me to the Society, and to pay the same to the Treasurer of the Society.

Dated this.....day of.....190....
Signature.....
Witness.....

*London County Council Tramways.*

AN AGREEMENT made between the London County Council (herein called the "Council") by Aubrey Llewellyn Coventry Fell, Chief Officer of the London County Council Tramways (herein called the "Chief Officer") and.....(herein called the "Driver") for the service of the said.....
.....as a Driver on the Tramways of the Council.

1. The Driver will serve the Council and the Council will hire him to serve it in the capacity of a Driver of the Tramway Cars or Omnibuses of the Council and the conditions in the other clauses of this Agreement expressed are the conditions of such service and hiring.

2. The service and hiring contracted for are a general service and hiring commencing on the.....day of.....190.... and to continue until terminated in manner herein provided. The Contract may be terminated by the Council or the Chief Officer or by the Driver by one clear day's written notice, the notice by the Driver to be given to the Chief Officer.

3. The wages of the Driver payable by the Council shall be at the rate per day which from time to time shall be determined by the Council. The wages will accrue from day to day but be paid once a week only, and shall only accrue and be paid for such days and parts of days as the Driver is actually on duty by order of the Council or the Chief Officer.

4. The Driver will faithfully fulfill all his duties as a Driver on any route on which the Chief Officer from time to time directs him to perform his services and especially will observe and be bound by as well all the clauses which relate to Drivers of the Rules and Regulations of the staff of the Council and also all alterations from time to time of the said Rules and Regulations or any of them.

5. In case of any breach by the Driver of any of the said Rules and Regulations or any alterations thereof the Chief Officer after hearing the parties may on behalf of the Council retain all wages due to the Driver as Liquidated damages for any damages and loss occasioned to the Council or their property by the Driver and all damages, fines and penalties to which the Council may become or be made liable by reason of anything wrongfully or negligently done or omitted or suffered by the Driver and for the payment of all moneys, fines or forfeitures and the satisfaction of all things for which he is made liable by any of the clauses of any of the said Rules and Regulations or any alterations thereof.

6. Provided always that no act or omission of the Driver amounting to a criminal offence for which he would or might be liable to be convicted either under an indictment or by any Stipendiary or Police Magistrate or Justice or Justices of the Peace in a summary way is or

shall be deemed to be within the meaning of the provisions of Clause 5, hereof.

Dated this.....day of.....190....

Signed by the said Aubrey Llewellyn Coventry Fell in the presence of }

.....

Signed by..... }
(the Driver) in the presence of }

.....

.....day of.....190....

I.....do hereby acknowledge receipt of a Copy of the Rules and Regulations for Drivers and a Copy of the Agreement.

(Signature) .....

*Glasgow Tramways.*

The men do not sign a contract in the usual sense in which this term is accepted in America, but the "*Book of Rules and Regulations for Officers and Servants of the Glasgow Corporation Tramways*" contains a rule as follows:

"Every employee, by subscribing to these Rules and Regulations, covenants and promises to devote himself exclusively to the service of the Department, strictly to conform to, and comply with, these Rules and Regulations, and also to all others which may hereafter be issued."

Each man who is engaged signs for uniform and the other equipment, and also for a copy of the rule book, and this constitutes the only contract between the men and the department. The management does not require the men to give any notice or warning, and is not bound to give any notice when dismissing or dispensing with a man's services.

## PROFIT SHARING OR CO-PARTNERSHIP.

The only undertaking within our investigation which has a system of sharing profit with employees is the South Metropolitan Gas Company. The idea had been suggested by the chairman, Sir George Livesey, as early as 1886, but it was not adopted until 1889, when a plan became necessary that would attract employees who were about to joint the newly-formed Gas Workers' Union. In June of that year the men in the retort house had secured through their union the eight-hour day, and their success had encouraged the yard men also to go into the union. On the suggestion made to the chairman by a yard foreman that something must be done to attach the men to the company a profit-sharing contract was offered to all who would sign as individuals.[1] Yard men and the mechanics to the number of about 1,000 accepted and signed the contracts within a fortnight, but the stokers in their union forbade their members to sign on the ground that it would break up the union. An essential part of the contract was the agreement to work for twelve months unless relieved at the discretion of the engineer, which would have made it a criminal offense for one who signed the contract to obey an order of the union to strike.

[1] See title: Individual Contracts, p. 69.

When the union discovered that three of its members had signed, it demanded their removal, and afterward demanded that all who signed should be removed. This being refused the stokers ordered a strike, and their places were filled by others, who signed the contracts. At the present time, of the 6,000 employees about 5,000 are working under contracts. The contract remains substantially in its original form, including a clause to the effect that the employee shall "be entitled to the benefit and be bound by the conditions of the copartnership rules (formerly 'profit-sharing rules') so long as he shall continue in the service of the company under agreement." Since this clause makes the rules a part of his contract, the relations of the employee to the company have changed, along with the advance of the rules from those of a simple bonus scheme to those of an elaborate system designated not as "profit-sharing" but by the larger title "copartnership."

The details of the profit-sharing plan are based upon the sliding scale system which has applied to the company since 1876 by Act of Parliament, and when the sliding scale was changed in 1900 the profit-sharing scheme was changed to correspond. According to the sliding scale as it stands at present, the company is permitted to declare a dividend of 4 per cent. if the price of gas sold is 3s. 1d. (74 cents) per 1,000 feet or more; but for every penny (2 cents) reduction in the price of gas the rate of dividend may be increased 3 1-3 per cent. That is, if gas is sold at 3s. (72 c.)—a reduction of 1d. (2c.) below the initial price—the rate of dividend may be raised to 4.03 1-3 per cent. The present price of gas is 2s. (48c.), which is a reduction of 13d. (26c.) below the initial price. This permits a bonus equivalent to 43 1-3 per cent. of the rate of dividend, so that the company is permitted to declare a dividend at the rate of 5.73 1-3 per cent. It is, therefore, to the interest of the shareholders that gas should be sold at the lowest practicable price. But the act of Parliament does not apply the principle of the sliding scale to the employees of the company, and consequently so far as legislation is concerned they have no direct interest in the price at which gas is sold. The profit-sharing scheme applies the same principle to employees, by the same method of calculation, the bonus, however, being calculated at a lower rate. The same initial price is taken, namely 3s. 1d. (74c.), at which no bonus is paid. Then for every penny reduction in the price of gas the year's wages are increased by a bonus of three-quarters of 1 per cent. The present price of gas, 2s. (48c.) permits a bonus of thirteen times this rate, or 9¾ per cent. Thus comparing two partners who receive equal amounts in one year, say $400, the one as interest on shares of a nominal value of $10,000, the other as wages on his labor, when the price of gas is 74c. each receives $400 and no bonus. If the price of gas is reduced to 72c., the amount received as interest is $413.33 and the amount received as wages is $403. With the price at 48c., where it stands at present, the interest payment is $573.33 and the wage payment is $439. Thus the principle of the sliding scale is applied to both classes of partners in the enter-

prise and offers to both of them a direct incentive to reduce the price of gas to consumers.

This reduction in price can come about only by a reduction in the costs of manufacture and distribution. At the time when the profit-sharing plan was adopted, in 1889, the company, in accepting the eight-hour system, had to meet a greatly increased cost of labor. The change from twelve hours to eight, at the same rates of pay per day, meant an increase of 50 per cent. in the cost of labor in the retort house. In order to overcome this handicap the management endeavored in various ways to increase the amount of work, such as making the scoops larger, detailing men to keep them in repair and to see that they were kept full, and shortening the periods of rest, and in other ways economizing labor. These efforts were accompanied by serious friction and insubordination on the part of the members of the union, so that the management lost control of their retort houses, and the costs of manufacture could not be reduced. The effects of the profit-sharing plan has been to eliminate these factors and to secure for the company a greater amount of work and output on the part of employees than the amount secured in any of the other enterprises visited. This result, in the opinion of the management, places the profit-sharing device on a sound economic basis. The chairman of the company, in addressing the co-partners on the occasion of the distribution of the bonus in 1904, said:[1]

> Co-partnership is business, not philanthropy. The Co-partnership bonus of £32,000 is no part of salaries or wages. To salaries and wages, there is an absolute right enforceable by law. Other things are gifts, such as payment for holidays, contributions by employees to sick and superannuation funds, etc., to which employees have no legal claim; but the Co-partnership bonus is not a gift and it cannot be claimed as a right. . . . It is, or it ought to be, money representing wealth or property actually created by the operation of the Co-partnership system. The employees being partners have a definite and direct interest in doing their best for the business by which they obtain their living. This direct interest induces them to work more intelligently, to avoid waste of time and material, and generally to make their work as effective as possible. . . . The bonus is the result of their better and more intelligent working and of their saving of time and materials. It is on this ground alone that the bonus can be justified.

But the simple profit-sharing scheme, as adopted at first, did not produce the permanent and zealous interest in the company's success that was desired. The bonus was paid in cash and in most cases was immediately expended by the recipient, so that once paid it ceased to influence the workmen towards greater effort. In fact, it was found to work harm and encourage thriftlessness, because a man would spend all of his wages knowing that the bonus would pay for his holiday and extra expenses. The company encouraged the men to save their bonus, and about 40 per cent. of them saved the whole or a part and left it with the company to invest, but the other 60 per cent. were not much more heartily attached to their

[1] South Metropolitan Gas Company Co-Partnership Journal, July, 1904, p. 99.

work than before. In addressing the co-partners in 1904, the Chairman said:[1]

"Hitherto, it has been possible to show that the bonus money has been earned by better work. . . . The growth of the Holding of the Employees in the Company's Stock . . . shows that the Employees have confidence in the Company, that they make good use of the bonus, and that being Shareholders, they have a strong motive to do what they can to promote the interest of the Company. This applies only to those who save their bonus—for those who withdraw it, I cannot say much."

The first four years' experience with the cash bonus made it plain that if it was to accomplish the full results looked for the recipients must be deprived of their wasteful control over its expenditure. This was partly done in 1894, when the bonus was made 50 per cent. larger, but was divided into two parts, a withdrawal bonus to be paid in cash and a stock bonus. In both cases the bonus is the absolute property of the employee. The stock bonus if not large enough to purchase a stock certificate of £10 is invested in the names of three trustees in the ordinary stock of the company until it shall be sufficient either alone or with addition made by the workman to purchase a certificate, and this is then transferred to him. Dividends on the stock are also retained and invested by the trustees on the same terms. If the stock is issued from the treasury its value is placed at the average market price of the past month as determined by the Board of Trade. This is done in accordance with the special act of Parliament, enacted in 1894, permitting the company to offer stock before public auction to consumers and employees. If the stock is not furnished from the treasury, it is purchased on the open market. Approximately, the price of the stock during the past year, when dividends were 5½ per cent., was 130, so that the revenue on stock is about 4 per cent. on the investment.

While the stock is the absolute property of the employee, the rules place certain restrictions on his disposition of it. He can sell his stock at the market price on application to the secretary of the profit-sharing committee, who is the company's accountant. But if he sells to any outside party without the consent of the secretary of the company, he at once ceases to be a profit-sharer, "notwithstanding any agreement he may have signed." The consent of the secretary to the sale can be secured if the employee shows the best of reasons, such as investing in the building society connected with the company or buying a house. A sale without this consent disqualifies the employee for a renewal of his agreement, but he may qualify and again become a profit-sharer after the end of a year, by saving two weeks' wages.

In the case of the other half of his bonus, the withdrawable half, increasing restrictions have been placed on those who take it out in cash, until it has become practically the same as the stock bonus. Those who regularly withdraw this bonus are struck off the list the same as those who sell their stock bonus. Substan-

[1] Co-Partnership Journal, July, 1904, p. 100.

tially, the entire bonus, as well as the dividends, is therefore now invested in stock.

There remains, however, the possibility on the part of the thriftless of raising money through pawn-brokers and others on pledge of their stock certificates, but this practice also recently has been stopped by calling in all stock certificates belonging to employees and issuing a single certificate to those who possess more than one. This also enables the company to discover those who have sold their certificates. Finally, while the company has hitherto employed men both under agreements as profit-sharers and without agreements, the chairman has recently given notice that men not worthy of an agreement on account of selling or pawning their stock are not worth keeping in the employment of the company[1]. Thus the profit-sharing system has gradually developed from a simple bonus payable in cash and disposable at will by the employee into a semi-compulsory paternal partnership. The stock can be withdrawn or sold only when employee leaves the service of the company. As a result, instead of only 40 per cent. who save the bonus, the number who save is 95 per cent. The total amount of stock held by employees, including officers, is about £250,000 ($1,250,000) equivalent to 4 per cent. of the outstanding capital stock of $30,000,000. Of this, the amount held by 250 officers is £50,000. The amounts held by the 1,627 workmen who have £20 and over are as follows[2]:

*Stock-holdings of Workmen.*

| *Number.* | *Holdings.* |
|---|---|
| 470 | £20 |
| 192 | 25 |
| 310 | 30 |
| 115 | 35 |
| 126 | 40 |
| 47 | 45 |
| 70 | 50 |
| 21 | 55 |
| 47 | 60 |
| 26 | 65 |
| 34 | 70 |
| 169 | 100 and upwards. |
| 1,627 | |

Many of those holding £100 and upwards have £200, £300 and £400. The total number of workmen holding stock is about 4,500, and the number holding less than £20 is therefore about 2,800.

The machinery for managing the sliding bonus has developed along with the improvements in the investment of the bonus. At first there were simply two auditors, one selected by the workmen, another by the company. Then a committee of management was created, consisting of 18 members elected by the Board of Directors

[1] Co-Partnership Journal, January, 1906, p. 3.

[2] Co-Partnership Journal, August, 1905, p. 176; September, 1905, p. 187.

of the company and 18 members elected by the profit-sharers. This committee is the center and key, not only in the system of profit-sharing, but also in the administration of other funds to which employees and the company jointly contribute, such as the sick, superannuation, and accident funds. The 18 members elected by the directors include the chairman of the board (who is ex-officio chairman of the committee), the secretary of the board, a director, the chief engineer, station engineers, superintendents, and foremen. The secretary of the committee is also the company accountant, elected by the committee, but without a vote. The 18 workmen's representatives are elected from the several stations in proportion to the number of profit-sharing workmen. When the title was changed to "Co-partnership" in 1904, it was decided to restrict election to those holding £25 stock or more.[1] They hold office for three years, so that six are elected each year. Lists of those eligible for election by virtue of holding £25 stock and of those eligible to vote as stockholders, are sent to each station. Nomination and election are by ballot. In this election, foremen are included as workmen, and some of them are elected as workmen's representatives. Since foremen are also elected as company representatives, and are in all cases the agents of the company in managing the employees, they do not in a proper sense represent the interests of the wage-earners. The co-partnership committee is simply a means of registering the will of the company through its chairman, and the claim that it is a joint committee with equal representation is a fiction as well understood by the workmen as by its authors.

The culmination of this interesting development of profit sharing into co-partnership is found in the election by the profit sharers of three members of the Board of Directors of the Company. This is permitted by special Acts of Parliament in 1896 and 1897 authorizing the directors to prepare a scheme for the election of one or more directors by the share-holding employees of the company. The qualifications fixed by the directors are at least seven years constant employment by the company and the ownership of at least £100 stock. Not all of the employee shareholders are eligible as voters, but only those holding at least one share of the denomination of £5. The number of voters in 1905 was 3,163.[2] Nomination and election are by ballot, the shareholder signing his name with the number of votes to which he is entitled according to his number of shares. Two of the directors are elected by the workmen and one by the officers.[3] The Workmen's Directors are a foreman of the carpenter shop and a time-keeper. These directors, representing £200,000 stock, sit and vote on equal terms with the other six directors representing £6,000,000. Such doubts as existed in the minds of the older members of the board as to the success of this experiment have been entirely removed by the results of the elections. As stated by one of them, the employee directors "have

[1] Co-Partnership Journal, May, 1904, p. 73.
[2] Co-Partnership Journal, November, 1905, p. 228.
[3] Co-Partnership Journal, August, 1905, p. 171.

not shown themselves the directors of any particular section of the shareholders, but they have worked in the best interests of the company from every point of view.[1]"

## SICK AND DEATH BENEFITS.

Provision for sick and death insurance in the undertakings visited falls under three heads, according to whether it is provided by mutual schemes of employer and employees, by trade unions, or by friendly societies not trade unions. The pioneers in the adoption of insurance benefits and those which at the present time pay the largest aggregate benefits are the old-line trade unions. In addition to their strike and out-of-work benefits, the engineers, carpenters, bricklayers, painters, and similar unions of "tradesmen" pay sick benefits of varying amounts. This class of labor is but a small part of the total force of these enterprises, being employed in the repair shops, but their organizations are so strong that union members are found in enterprises which prevent the organization of the operative staff. At the same time members of these unions are found in much larger proportion in the municipal plants than in the private plants, and consequently to this extent those plants are better provided with benefit insurance. The other class of unions, those formed since 1889, while not usually providing superannuation and out-of-work benefits provide as large or larger sick, death, and accident benefits. The National Union of Gas Workers pays 10s. for the first thirteen weeks and 5s. for the second thirteen weeks of sickness or accident disability, a total of £9 15s. for the maximum period; and a death benefit of £8 for a member and £4 for a member's wife. These benefits therefore apply to the municipal gas works in Manchester, where the union has a local branch. The Municipal Employees' Association, represented in the Glasgow Gas Works and the London County Council Tramways, pays 10s. for eight weeks, and 5s. for four weeks, a total of £5 for the maximum period, and death benefits of £1 to £10, according to length of membership. The National Amalgamated Union of Labor, which includes nearly all of the employees of the Newcastle Gas Company, pays no sick benefit, but pays an accident benefit and a death benefit of £4 for a member and £2 for a member's wife. The Tramway and Vehicle Workers, including 90 per cent. of the employees in the municipal tramways of Manchester and the London County Council, pays sick benefits on three scales, ranging from 7s. to 15s. for eight weeks, 5s. to 12s. the second eight weeks, and 2s. 6d. to 10s. the third eight weeks, the total payments for the maximum period being respectively £10 12s., £16 and £29 12s. It pays also death benefits of £5 to £10, acccording to period of membership. The Electrical Trades Union, represented in the Glasgow and London Municipal undertakings, pays 10s. and 5s. for twenty-six weeks, total £9 15s.

The mutual schemes are found in the South Metropolitan Gas Works, the Municipal Gas Works of Birmingham, and the Muni-

[1] Co-Partnership Journal, August, 1905, p. 171.

cipal Tramways of Glasgow. The South Metropolitan scheme is the oldest, having been established for officers as early as 1842, and being extended to different classes of workmen at different times until it now reaches all of the permanent employees, including the winter men in the retort house. The total number is 5,083, as against 6,051 contributing to the accident fund. Membership is nominally voluntary but actually compulsory. Dues are 3d. and 6d. a week, and the company guarantees the stability of the fund, provided the members pay subscriptions and prevent imposition. The payment on this account in 1905 was £1,895, equivalent to 1.8d. per member per week and one-third of 1 per cent. of the company's pay roll. The company appoints the trustees, who decide all disputes. The full benefits are not paid until a workman has been employed twelve months, and they amount to 12s. and 6s. a week for six months, for the members contributing 3d. per week, equivalent to £10 16s. for the maximum of six months, and 18s. and 9s. for the members paying 9d., equivalent to £16 4s. for the maximum period. On occasion of death an extra levy is made on the men at the station where the death occurrred, the amount ranging from 2d. in the largest station to 9d. in the smallest.

Four other private companies make small guarantees, limited to £20 to £50 to sick funds of the employees. These are the two electric companies at Newcastle and the City of London Electric Company. In the Birmingham Gas Works all employees are required to be members of the sick fund, and the corporation contributes £625. A similar requirement is also the case in the Glasgow Corporation Tramways Friendly Society and Superannuation Fund, where the members contribute 6d. and the corporation 4d. a week. The amount paid by the municipality in 1905 was £2,129, equivalent to 1 per cent. on wages. The Manchester Electrical Department contributes £370 to a thrift fund, to which employees are required to contribute. The Liverpool corporation requires all employees to belong to the Tramways Benefit Society and to contribute 3d. or 6d. a week, but the corporation makes no contribution or guaranty. Aside from these instances, there are no sick and death benefits in which the employing company or corporation takes a part, although there are benefit societies maintained solely by employees in several of the undertakings.

### SUPERANNUATION OR PENSION BENEFITS.

Five of the enterprises investigated have adopted systems of superannuation benefits or pensions to aged employees on retirement. One of these is a private company, the South Metropolitan Gas, and four are municipal undertakings, namely, Birmingham Gas, and the Glasgow, London County Council, and Liverpool Tramways. The oldest of these schemes is that of the South Metropolitan Company, which was first adopted in 1855, and at the end of fifty years, in 1905, the fund was yielding £2,912 in pensions to 113 annuitants, the oldest having been on the list since 1883. Workmen in permanent employment are eligible, and membership is not a condition of

employment, but the engineers and heads of departments twice a year examine their lists of workmen and put on the fund all who are eligible. Retort house men engaged only for the winter are not eligible. The number of subscribers in 1905 was 4,100, or two-thirds of the number 6,051 on the accident fund. Contributions are 3d. per week, but members may pay 6d. and receive additional benefits. Very few do so. The company contributes a minimum of 3d. per member per week, and since 1900 has guaranteed the stability of the fund. This guarantee required additional payments in 1905 equivalent to 2d. per member, making the total contribution of the company in that year 5d. per member per week, or £4,276, equivalent to nine-tenths of 1 per cent. on the pay roll. The reserve fund is invested in the company's ordinary stock. A member of less than ten years' standing receives the whole of his subscriptions without interest on leaving the company's service, and two-thirds of his subscription if he has been a member more than ten years. The scale of benefits has been revised at different times, and now provides that payments shall begin at any age after ten years' subscription and twenty-five years' service, but if the member retires before he is sixty-five years of age the amount of the benefit is reduced one-twentieth for each year short of the pension age. At the age of sixty-five the pensions range from 10s. per week after twenty-five years' subscription to 17s. for forty-three years' membership. Of the 113 pensions in 1905, there were 78 at 10s., 12 at 12s. and 12s. 6d., 13 at 14s. and 10 at 7s. to 18s. In a few cases of especially valuable employees the company supplements the pensions by donations, which amounted in 1905 to £868. In the case of injury resulting in permanent incapacity a member of ten years' standing receives 10s., but this is deducted from his accident benefit. In case of death after less than ten years' membership, the widow or dependent children, but no other person, is entitled to the whole of the member's payments, or three-fourths of the payments after more than ten years' membership.

The municipal superannuation schemes are much more recent. The Glasgow plan dates the accumulation of the fund from the year 1896, two years after the tramways were municipalized, and the pensions come into operation in 1911. Pensions begin after fifteen years' service at the rate of 10s. per week, and increase 1s. for every additional year of service until the maximum of 20s. is paid after twenty-five years' service. Members contribute 1d. per week and the corporation an equal amount, the total 2d. being included in the dues of the Friendly Society, to which members contribute 6d. and the corporation 4d. All employees are required to contribute to this fund.

The London County Council's Superannuation and Provident Fund came into operation in 1895, and it was extended to tramway employees in 1904. The regular employees of the tramways are required to contribute to this fund unless they can prove that they are making, through rfiendly or benefit societies, benefits substantially not less than they could secure under the Council's scheme.

The dues are about 2½ per cent. of the wages, and the Council contributes an equal sum. A member withdrawing at any time receives the whole of what he has contributed, with interest. Instead of a designated weekly payment on superannuation the members receives the whole of his own and the Council's contributions standing to his credit, but this must be invested in an annuity purchased and held in the name of the Council. These payments pass through the books of the Council, and the Council thus retains power to prevent the member selling or borrowing on pledge of his annuity, and to make the payments direct for the maintenance of the family or other dependents.

The Liverpool Tramways superannuation plan is not yet perfected in its details, but the corporation began in 1905 a contribution on its part looking to the support of such a scheme.

## ACCIDENTS TO EMPLOYEES.

Parliament enacted in 1897, and amended in 1900, a Workmen's Compensation Act, whose provisions cover the gas and electric but not the tramway undertakings which were investigated. The act is supplementary to, rather than a substitute for, the Employer's Liability Act of 1880. The workman may proceed under the Employer's Liability Act or the common law in all enterprises, including tramways, but if he loses his case the court may in electric and gas undertakings assess his compensation under the acts of 1897 and 1900. The important innovation in these acts is the fact that carelessness or negligence of either employer or workman is not considered. Only "serious and willful misconduct" of the injured man relieve the employer of paying him compensation. The employer who is entirely free from blame is required to make compensation for accidents the same as one guilty of negligence. Furthermore, the amount of compensation is fixed within certain limits. No compensation is paid on account of the first two weeks following an accident.

The act distinguishes between total and partial incapacity. Total incapacity entitles the workman, beginning at the end of two weeks, to a weekly payment of one-half his weekly earnings, but this payment shall not exceed 20s. ($4.85) a week. Partial incapacity entitles him to a smaller amount, to be determined with reference to the lower wages he is able to earn. If the incapacity is permanent, the payment becomes a weekly pension for life. But the employer at any time may have the payment reduced or stopped if he can show to the court that the man's earning capacity has partially or wholly recovered; and the workman may have a partial payment increased if he can show that the incapacity is more serious than was judged at first. The employer, but not the workman, has also the right to obtain a settlement of a lump sum by way of commutation of the weekly payments.

In case of fatal accident the act takes into account whether the workman had dependents, and if so whether they were partially

or wholly dependent. Where wholly dependent the minimum compensation is £150 ($750), the maximum £300 ($1,500).

The object of the Compensation Act is not to afford complete indemnity, as would be afforded under the common law or under Employers' Liability Acts, but to provide that a portion, approximately one-half, of the losses from industrial accidents, however caused, should be borne by employers.

The County Courts enforce the act through arbitrators, medical referees, registration of awards, etc., and all official fees are paid from the public treasury. No distinction is made between public and private employment, and the act applies equally to municipal and private enterprises. There is a provision, however, for "contracting out," by which an employer and his workman may substitute a mutual benefit scheme. This provision has been taken advantage of by but one of the enterprises investigated, the South Metropolitan Gas Company. All of the others, both municipal and private, are governed by the terms of the act. In the latter case it is the practice of some employers to insure themselves by policies taken out with insurance companies, whose business in this line has reached large proportions. Such insurance changes in no respect the procedure under the law—the insurance company simply agrees to pay whatever compensation is awarded and to bear the legal expenses. The premiums charged are a certain percentage on annual payments in wages.

The ultimate object of the act is not so much the payment of compensation as the prevention of accidents. But in general, according to the report of the Home Department Committee in 1904, the act has not had any ascertainable effect one way or the other upon the safety of the workmen.[1]

There have been a large amount of litigation respecting the law and some conflicting decisions. The workman who is not provided with legal advice or not prepared to prosecute his case in court is deprived of the full benefits of the law. For this reason one of the prominent features of the trade unions of Great Britain is their provision for legal assistance. Not only does this appear in the amounts expended for lawyers' fees, but also in the work of the local and district organizers and secretaries of the unions, who have become expert negotiators in presenting the claims of their members to employers and securing settlements without litigation. The union of Gas Workers and General Laborers make the claim of having recovered for their members in accident and wage cases, £45,993. Other unions have recovered many thousand pounds under the Employers' Liability and Compensation Acts. The departmental committee which in 1904 inquired into the workings of the Acts, declared:

"Where the organization of the associations both of employers and workmen is most complete there is the least amount of litigation and the greatest satisfaction with the settlements reached. Far greater diffi-

[1] Departmental Committee on Workmen's Compensation, Home Office, Vol. 1, p. 23, 1904.

culties appear to arise where there is no trade organization. The workman who has no organization to resort to for advice and assistance in such matters is comparatively helpless or has to call in legal assistance. Costs are at once incurred, and the dangers above pointed out attending litigation are much more likely to occur." [1]

In addition to the benefits secured under the Workmen's Compensation Acts, the labor unions endeavor to attract and hold their members through accident benefits. They are additional to the benefits secured from employers and supplement the act in one important particular, namely, provision for the first two weeks following the accident, during which time compensation can not be secured from the employer under the act. They furnish also medical aid as needed, which the employer does not, except in so far as the protection of his interests leads him to render first aid at the time of the accident. All of the unions provide accident benefits. In some cases it is in the form of the sick benefits already described, which cover accidents causing temporary disability. This is true of the National Union of Gas Workers and Laborers, the Tramway and Vehicle Workers, the Municipal Employees' Association, and the Amalgamated Engineers. Other unions not having sick benefits pay special accident benefits. The National Amalgamated Union of Labor pays accident benefits of 6s. the first thirteen weeks and 4s. the second thirteen weeks. The Northern United Enginemen pay benefits of 8s. for ten weeks, 5s. the second ten weeks and 3s. the third ten weeks. The Birmingham Gas Workers pay 10s. the first thirteen weeks and 5s. the second thirteen weeks. Others have a scale for accidents different from that for sickness, such as the Electrical Trades Union, 10s. for fourteen weeks. In all cases payment begins at date of accident or receipt of doctor's certificate. Those unions whose members are peculiarly exposed to accident have adopted a special benefit for permanent disability. The National Union of Gas Workers, to those who pay 1d. (2 cents) additional dues, grants £50 to full-pay members and £25 to half-pay members, in cases of total permanent disability, and £20 to full-pay members and £10 to half-pay members in cases of partial permanent disability. The Tramway and Vehicle Workers grant £50 ($250) to members on the A and B scales; and the Municipal Employees grant £100 to full-pay members in cases of permanent total disability, and £50 to half-pay members. These accident benefits are considered by the unions as one of the principal inducements offered to attract and hold their members.

Under the Workmen's Compensation Act, unlike the Employers' Liability Act, a contract on the part of the workman to relieve the employer of liability is void, and the workman can secure compensation notwithstanding such contract. If, however, the employer and his workman submit a scheme of compensation which in the judgment of the Registrar of Friendly Societies is "on the whole not less favorable to the general body of workmen and their dependents than the provisions of the Act," such scheme may be substituted. The Registrar issues a certificate for not less than five

[1] Report, p. 43.

years and may revoke it on evidence. Under this provision the South Metropolitan scheme providing for contributions by the workmen and by the company was certified in 1898 and again in 1903.

No scheme can be certified which requires the workmen to join on condition of their hiring. Consequently one of the inducements offered by the South Metropolitan scheme is the promise of certain benefits not included in the Workmen's Compensation Act, especially payment during the first two weeks and medical attendance. The company also promises re-employment to subscribers on recovery at not less than 24s. a week, if the wages exceeded that amount. Finally, formal acceptance by each employee is not necessary, but the subscriptions are deducted from wages on the first pay day in each month. The employee who does not wish to subscribe must notify the company to that effect, otherwise he is held to be a subscriber and his dues are deducted. This deduction constitutes acceptance of the benefits of the fund in lieu of claims under the Workmen's Compensation and Employers' Liability Acts. It is deemed a contract under the "contracting out" clause of the Workmen's Compensation Act. All men in receipt of weekly wages, including all odd or casual men, are "invited" to contribute to the fund, and acceptance of this invitation, by permitting the deduction of dues, is practically a condition of hiring. The number of subscribers is therefore the entire force covered by the Workmen's Compensation Acts, namely, 6,051 in 1905, and although there is a clause in the rules providing for non-members this has no effect because there are none.

The Registrar of Friendly Societies receives report each year, and this report is favorable if the scheme is solvent. But since solvency can be maintained by keeping down the amounts paid for accidents as well as by keeping up the reserve funds, the accountants' examination affords no guaranty that the compensations actually paid are as many or as large as those required by the act. In order to guard against such contingencies the Registrar is required to make an examination, provided the workmen send him a formal complaint that the scheme is being violated or is not fairly administered. This complaint is made out according to a blank form furnished by the Registrar and is signed by the workmen "on behalf of themselves and the other workmen of the said employer."[1] This provision is entirely worthless unless the workmen are protected from dismissal by a trade union or otherwise. Consequently the cases of inadequate compensation at the South Metropolitan works, compared with what the act would require, do not provoke public complaint on the part of the workmen or investigation by the Registrar. The administration of the fund is under the charge of the Co-partnership Committee, which, as shown above, is a pretended joint committee of the company and workmen, but really a committee of the company. Since only co-partners are represented on the committee, there are 1,000 to 1,500 subscribers to the acci-

[1] Departmental Committee, Vol. 1, p. 194.

dent fund not represented in its management. The accounts and moneys are kept by the company's officers at the company's expense. Two auditors are appointed by the Co-partnership Committee, one by the workmen's representatives, the other by the company's representatives.

The scale of benefits show certain departures from that of the Workmen's Compensation Act. It provides certain benefits not included in the act. These are medical attendance and payment during eleven days of the first fortnight. "Minor and slight accidents," disability for not less than three days or more than a fortnight, entitle members to 12s. a week, and are placed under "Class A." These are benefits for which the employer is not responsible under the act. "Class B" includes "Serious accidents," causing incapacity for more than a fortnight. Instead of one-half the man's wages after the first fortnight as provided by the act, he is entitled to a flat rate of 18s. a week beginning after the third day. This, with the exception of the first fortnight, is more than the act awards to those whose wages are less than 36s. and less than the act awards to those whose wages are more than 36s. If the employee is a member of the Superannuation Fund, his pension from that fund is deducted, but the total from the two funds must not be less than he could have obtained under the Workmen's Compensation Act.

"Class C" includes accidents "clearly caused by the negligence of the company or its officers," and the benefit is 24s. a week. This differs from the Workmen's Compensation Act in that the latter adds nothing to the amount of weekly payments on account of the negligence of the employer, but the workmen may proceed against the employer under the Employers' Liability Act, and if he loses he may fall back on the Compensation Act. This course is not open to one who has contracted out.

"Class D" includes injuries caused by the "serious and willful misconduct" of the member. These receive only the amount derived from their own contributions. This agrees with the provisions of the Compensation Act, which excludes all questions of carelessness or negligence, but excludes workmen guilty of "serious and willful misconduct." But the juries in the South Metropolitan scheme are requested to look into the matter of negligence, and their verdicts fix the blame of neglect or carelessness. To what extent these verdicts of negligence are interpreted as misconduct depends upon the authority that decides the question. Under the Compensation Acts, the courts have nearly always overruled the contention of employers who set up "serious and willful misconduct" as a defense. But in the South Metropolitan scheme the employer and not the court is the final judge. This applies to the many warning notices and special rules posted about their works, the non-observance of which is held to be equivalent to serious and willful misconduct. In one case testified to before the departmental committee a man who cleaned machinery while it was in motion was debarred because he had willfully done what he had instructions not to do.[1]

[1] Departmental Committee, Minutes of Evidence, p. 7209.

The procedure in determining the amount of compensation, which is done by assigning accidents to the several classes, begins with "juries of workmen," introduced in 1892. Two members of the Co-partnership Committee and ten others, selected alphabetically from a list of employees who have been three years in the company's service, constitute the jury. The engineer of the station is the presiding officer, except in fatal cases, when the Chairman of the Company presides. The jury retires alone to agree upon a verdict as to the causes of the accident, whether due to defect of plant, machinery or means of protection, or to the neglect or carelessness of any official or workman. After determining this point, the jury consults with the presiding officer respecting the class in which the injured man shall be placed. If there is doubt as to whether the man is entitled to compensation, or as to the amount of compensation, the twelve jurymen decide by a two-thirds vote, but the injured workman or the company's engineer may appeal to the Chairman of the Company, whose decision is final.

Under the Workmen's Compensation Act, special protection is thrown about the medical examination. The workman is entitled to have his own doctor and if he does not agree with the company doctor as to the man's incapacity, the decision is made by a medical referee appointed by the court. These three physicians may be called in at the time of the accident or at a later time when the employer moves to have the compensation reduced or stopped on the ground that the man has partially or wholly recovered. The court then decides the case on the advice of the referee. In the South Metropolitan scheme the only doctor provided when the claim is made is the company doctor, who also acts as surgeon to the Sick Fund. Upon his report the Co-partnership Committee decides whether to stop or reduce the allowance.

The operation of the system may be seen in a case reported in the Journal published by the Co-partnership Committee.[1] A bricklayer injured in October, 1904, was placed in Class A at 12s., and remained on that scale until May, 1905, a period of 38 weeks. Under the Compensation Act he should have received half pay, or the maximum 20s., the union scale for bricklayers in London being 42s. His total compensation for 33 weeks was therefore £12 4s. less than the legal scale. Even under the South Metropolitan scheme he should have been transferred to "Class B," and received 18s. after the end of the first fortnight. In this respect the Co-partnership Committee did not carry out their own rules in good faith. At the end of eight months the hospital surgeon reported him partially recovered and the company doctor reported him "quite recovered" and "able to resume work." The engineer offered him light work, presumably at 24s. a week, according to the promise of the company contained in the rules, although the amount is not stated. This the injured man refused, preferring the 12s. a week until he could resume as a bricklayer. The Co-partnership

[1] South Metropolitan Gas Company Co-Partnership Journal, December, 1905, pp. 256, 257.

Committee ordered him to be re-examined, and he was again reported as fit for work by the company's medical officer. His accident money was therefore stopped. Under the Compensation Act he would have been entitled to the opinion of his own doctor and of the medical referee in case of disagreement with the company's doctor. And, if he could not earn full wages as a bricklayer, his accident pay could only have been reduced, not stopped. The courts differ on this point. Some of them permit no reduction in the accident pay, so long as his present wages added to his accident pay do not exceed his former earnings.[1] Other judges reduce the compensation to one-half of the difference between his present wages and his former wages.[2] Under either line of decisions the bricklayer, instead of being cut off altogether, would have received half pay or less, in addition to his earnings at the lighter work, until such time as he could resume work as a bricklayer at full wages.

In the case of fatal accidents the Compensation Act grants to dependents three years' wages in a lump sum, the minimum, however, to be £150 and the maximum £300. The South Metropolitan scheme changes this into a weekly pension of 10s. to 20s. for the first three years and a minimum of 10s. thereafter. This continues for the widow while leading a respectable life or until re-marriage. The Co-partnership Committee determines the amount and termination of the pension. In general the weekly pension is of more advantage to a widow than the lump sum on account of her inexperience of handling large sums of money. In this respect the scheme is superior to the Compensation Act. Also in case of continued widowhood the pension extends the benefit over the period when it is most needed, and contributes a total sum larger than the maximum of the Compensation Act. In the South Metropolitan scheme, in 1905 there were twenty-three pensions, of which two had been paid fourteen years, three thirteen years, one twelve years, one eleven years, one ten years, and others from one to seven years. Fifteen were paid the minimum amount 10s., five were paid more than the minimum, and three less than the minimum stipulated in the rules.

The financial results for eight years, 1898 to 1905, during which the fund has been established, show that the workmen have paid £3,958 1s. 3d. and the company £9,155 1s. 2d. The total amounts paid on account of benefits are as follows, distinguishing the items for which the company is responsible under the Compensation Act, and those that are additional to the Act:

| | £ | s. | d. |
|---|---|---|---|
| Doctors' fees | 357 | 9 | 11 |
| Class A | 1,022 | 8 | 6 |
| Class B | 2,199 | 0 | 0 |
| Not under Compensation Act | 3,579 | 18 | 5 |

The total payments in Class B (above) have been £6,879 9*s.* 7*d.*, but, according to the estimate of Sir George Livesey that 57 per cent.

[1] Board of Trade Labor Gazette, January, 1906, p. 24.
[2] Departmental Committee, Vol. 1, pp. 83-89, 181, 182.

of the payments in the three classes are made beyond the first two weeks, Class B is divided in the table on this basis.

| | £ | s. | d. |
|---|---|---|---|
| Class B (after first two weeks) | 4,680 | 9 | 7 |
| Class C | 310 | 2 | 0 |
| Pensions to widows | 3,718 | 4 | 2 |
| Commutations | 350 | 10 | 0 |
| Balance | 476 | 18 | 3 |
| Total under Compensation Act | 9,536 | 4 | 0 |

From this table of eight years' results, it is seen that employees have received £3,579 18s. 5d. for medical attendance and benefits during the first fortnight which they would not have received under the Compensation Act. For these additional benefits they have paid £3,958 1s. 3d. which they would not have paid under the Act. Consequently their contributions have paid all of the extra benefits which the scheme provides and an additional amount of £380 as a contribution in aid of the company in paying the compensation for which, under the Act, the company is responsible.

## WAGES.

The following table, compiled from reports of the Board of Trade, shows the aggregate changes in rates of wages in Great Britain for the years 1894 to the beginning of 1906. They indicate in all trades a net increase for the five years preceding 1901, and a decrease for each of the succeeding years. The wages of public employees include both government and local bodies prior to 1903 and only local bodies for 1903 to 1905. They show in general a slight tendency towards an increase in wages of public employees, even when wages in general are declining:

*Changes in Rates of Wages, 1894, to Beginning of 1906.*

Tenth Abstract of Labor Statistics, pp. 54, 56 1894-95 ("Labor Gazette," January, 1906,, p. 4, 1896-1905), Exclusive of Agricultural Laborers, Seamen, Railway Servants and (1896-1905) Government Employees.

| | *All Trades.* | | *Employees of Public Authorities (Local Authorities, 1903-5).* | |
|---|---|---|---|---|
| | *Number of Separate Individuals Affected.* | *Net Increase (+) or Decrease (—).* £ | *Number of Separate Individuals Affected.* | *Net Increase (+).* £ |
| 1894 | 670,386 | — 45,091 | 9,229 | + 681 |
| 1895 | 436,958 | — 28,199 | 6,935 | + 559 |
| 1896 | 598,865 | + 26,152 | 14,523 | + 882 |
| 1897 | 582,333 | + 30,494 | 20,982 | + 1,514 |
| 1898 | 1,010,057 | + 80,572 | 12,139 | + 857 |
| 1899 | 1,165,478 | + 89,816 | 19,524 | + 1,148 |
| 1900 | 1,110,031 | + 206,772 | 31,743 | + 2,592 |
| 1901 | 907,199 | — 77,902 | 27,628 | + 1,833 |
| 1902 | 883,191 | — 72,865 | 7,871 | + 602 |
| 1903 | 892,922 | — 38,557 | 4,974 | + 282 |
| 1904 | 799,959 | — 39,278 | 7,546 | + 609 |
| 1905[1] | 571,865 | — 8,029 | 5,242 | + 404 |

[1] Preliminary figures subject to revision.

In making comparisons of the wages paid by companies and corporations, account must be taken of the variations in the general level of wages in the several localities. Our investigations on this point have been made as careful and extensive as possible and they indicate that for common labor, unorganized, the level is about the same for the cities of Manchester, Birmingham, Leicester, and Sheffield; that it is somewhat lower for Liverpool, and considerably lower for Dublin, Glasgow and Norwich, these being located at seaports or in an agricultural region; that the level is highest in London, and that Newcastle has the highest wage level outside of London. The following table shows substantially the relative position of the places visited:

*Local Standards for Wages of Common Unorganized Labor.*

| *Towns.* | *Prevailing Rates.* | | *Relative Position.* |
|---|---|---|---|
| | *Per Week.* | *Per Hour.* | |
| | *s.* | *d.* | |
| Manchester | 20 | 4.5 | 100 |
| Birmingham | 20 | 4.5 | 100 |
| Leicester | 20 | 4.5 | 100 |
| Sheffield | 20 | 4.5 | 100 |
| Liverpool | 19 | 4.5 | 95 |
| Dublin | 18 | 4.0 | 90 |
| Glasgow | 18 | 4.0 | 90 |
| Norwich | 18 | 4.0 | 90 |
| Newcastle | 21 | 4.8 | 105 |
| London | 22 | 5.0 | 110 |

**Gas Works.**

In the seven gas works visited the nominal rates of wages of men working on shifts in the retort houses are augmented by extra pay for Sunday work and by pay for holidays and vacations. The extent of these extra remunerations is shown in the answers to the schedule questions. In the following statistical table the comparison has been made by distributing over the entire year this extra pay and adding it to the nominal rates. This results in increasing the nominal rates by 2 per cent. in Leicester and 3.8 per cent. in Sheffield to 7.2 per cent. in the South Metropolitan and 8.3 per cent. in Manchester (col. 3). The percentage of increase in Leicester is low because no work is done on Sundays, so that the time-and-half or double pay for Sunday work obtaining in other places does not augment the regular weekday rates. The correction in Leicester allows only for pay for holidays, while in the other places it allows both for holidays and for extra pay on Sundays. On the other hand the low increase of 3.8 per cent. in Sheffield is due to the absence of holidays and is owing solely to the extra pay on Sundays and holidays.

With these corrections, after reducing wages to the hourly basis, it will be seen (col. 4) that the highest wages of stokers are paid to the eight-hour men of the South Metropolitan Company (9.65d.) and the lowest are paid in Glasgow (7.74d.) But, if we take into account the general level of wages in the localities, the highest wages *relatively* are paid in Manchester (9.34d.) and the

lowest are paid to the twelve-hour men of the South Metropolitan Company (7.77d.). This will be seen by comparing columns 6 and 7. Taking the four establishments where the general level of wages is about the same, the rates of pay are in the following order: Manchester, 9.34d.; Sheffield, 8.95d.; Birmingham, 8.70d., and Leicester, 8.28d., and the relative standing of these places is, Manchester 100, Sheffield 96, Birmingham 93, and Leicester 89.

Taking Glasgow, where the general level of wages is 10 per cent. below that of the latter four places, it will be seen that, relatively speaking, the wages at the Tradeston station (7.74d.) are equivalent to those paid at Birmingham, while the wages at the newly-equipped Provan station (8.13d.) are slightly below those paid at Sheffield (8.95d.).

Taking Newcastle, where the general level of wages is about 5 per cent. higher than the level of the four places mentioned, the wages of stokers (9.09d.) are equivalent to those at the Tradeston station, Glasgow (7.74d.) and at Birmingham (8.7d.).

Taking the South Metropolitan Company, where the general level is 10 per cent. above the four places, the hourly wages of the eight-hour or three-shift men (9.65d.) are equivalent to those at the Tradeston station, Glasgow (7.74d.), Birmingham (8.7d.) and Newcastle (9.09d.), but lower than those at Manchester, Sheffield (8.95d.) and the Provan station, Glasgow (7.71d.). On the other hand, the hourly rates of the twelve-hour or two-shift men (7.77d.) are relatively the lowest of all, being about 16 per cent. lower than the wages at Leicester, when compared with the general level of wages of the two localities.

The foregoing applies only to the stokers, and does not distinguish between hand and machine stoking. The average wages for the entire retort-house are shown in col. 5. These averages are obtained by giving to each occupation a weight in proportion to its number of men. In this column the order of precedence is changed, and, comparing the general level of wages in the locality (cols. 6 and 8), the average wages in the retort-house are highest in the Provan station, Glasgow (7.71d.), the Elswick station, Newcastle (8.66d.), and the eight-hour stations of the South Metropolitan (9.13d.). Next to these, and practically on the same level compared with the general level of wages, are Manchester, Sheffield, the Redheugh station, Newcastle (8.36d.), and the Tradeston station, Glasgow (7.13d.). The lowest averages are in Leicester (7.73d.) and Birmingham (7.77d.).

Summarizing what precedes, with the exception of the twelve-hour stations of the South Metropolitan Company, and taking into account the general level of wages in the several localities, it cannot be said that there is any material difference between the public and private undertakings in the wages of stokers or in the average wages of the shift-workers in the retort-houses. The differences that occur do not show a prevalence one way or other, but they tend to follow pretty closely the general level of wages in the locality, irrespective of whether the undertaking is managed by a municipality or by a private company. The case of the twelve-

hour shifts of the South Metropolitan Company is peculiar and requires the discussion of another aspect of the question—the amount of work done by the stokers.

*Comparative Wages of Stokers and Retort House Employees.—Pence Per Hour.*

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | |
|---|---|---|---|---|---|---|---|---|---|
| | Stokers. | | | All Employees in Retort House. | Relative Position. | | | | |
| | Stated Rates. | Percentage to be Added on Account Holidays and Extra Pay. | Corrected Rates. | Corrected Weighted Average, Corrected Rates. | General Level of Wages in the Locality. | Stokers, Manchester, = 100. | Retort House, Manchester, = 100. | Difference Between General Level and Stokers. | Difference Between General Level and Retort House. |
| | d. | Per Cent. | d. | d. | Per Cent. | Per Cent. | Per Cent. | | |
| Glasgow—Public: | | | | | | | | | |
| Provan | 7.87 | 3.3 | 8.13 | 7.71 | 90 | 87 | 95 | — 3 | + 5 |
| Tradeston | 7.50 | 3.3 | 7.74 | 7.13 | 90 | 83 | 88 | — 7 | — 2 |
| Manchester—Public | 8.62 | 8.3 | 9.34 | 8.13 | 100 | 100 | 100 | ... | ... |
| Birmingham—Public | 8.25 | 5.4 | 8.70 | 7.77[1] | 100 | 93 | 95[1] | — 7 | — 5 |
| Leicester—Public | 8.12 | 2.0 | 8.28 | 7.73 | 100 | 89 | 95 | — 11 | — 5 |
| Newcastle—Private: | | | | | | | | | |
| Elswick | 8.56 | 6.2 | 9.09 | 8.66 | 105 | 97 | 107 | — 8 | + 2 |
| Redheugh | 8.56 | 6.2 | 9.09 | 8.36 | 105 | 97 | 103 | — 8 | — 2 |
| Sheffield—Private | 8.62 | 3.8 | 8.95 | 7.90 | 100 | 96 | 97 | — 4 | — 3 |
| South Metropolitan: | | | | | | | | | |
| Eight-hour stations | 9.00 | 7.2 | 9.65 | 9.13 | 110 | 103 | 112 | — 7 | + 2 |
| Twelve-hour stations | 7.25 | 7.2 | 7.77 | 7.38[1] | 110 | 83 | 90[1] | — 27 | — 20 |

[1] Estimated same proportion to stokers as Manchester and South Metropolitan.

It is generally understood in the industry that, under their exhausting conditions, stokers are not expected to work steadily during all the hours of their shift, but are required to charge and draw a certain number of retorts and then permitted to enjoy a period of rest before going on their rounds again. At the end of the last round they go home, even though they may not have put in the full eight hours. All of the shifts in the stations visited are on the eight-hour basis except the two stations of the South Metropolitan Company on the twelve-hour basis. Of those on the eight-hour basis the shortest period of actual work was formerly in the Gaythorn station at Manchester, with inclined retorts, namely, three and one-half hours. At the Bradford Road station, in the same place, the time was four and one-half hours, but these figures are for the year 1904, and the time at both stations has been equalized to something less than four hours. About four hours is required at Leicester and a slightly larger amount of time at Birmingham, four and one-quarter hours, while Glasgow and Newcastle require five hours, and Sheffield and the South Metropolitan six hours. These, of course, are not fixed and unchangeable periods of work, but vary more or less according to emergencies. They are rather the standards of the several establishments during which it is understood the stint or amount of work can ordinarily be done. In winter, when the best conditions prevail, the time may be increased at the Christmas period, but in the summer it may be reduced. In one case, the Redheugh station, Newcastle, the actual time at present is six hours, instead of five, but it is expected that when the men become familiar with the operation of the new machinery of the station they will be able to reduce their amount of work from six to five hours. At the Effingham station, in Sheffield, the six hours is exceeded during the holiday period, so that the men have no time for meals or rest, and the next shift takes their work unfinished. This is a hand-stoking station, where the men are required to lime and seal the doors, while at the hand stations of Leicester and Newcastle the doors have patent sealers, requiring considerably less time for a given amount of coal handled. At Birmingham the original agreement of the union was for six hours, but it has been gradually reduced to four and one-quarter.

The situation in the South Metropolitan stations is peculiar, in that two of the stations, Old Kent Road and Vauxhall, are on the eight-hour system; one of the stations, Greenwich, is on the twelve-hour system, and another station, Rotherhithe, is on the eight-hour in summer and the twelve-hour system in winter. This arrangement was brought about by a vote of the men in the several stations. Before the eight-hour day was granted to the gas workers' union in 1889, the practice had been to require about six hours' work out of the twelve-hours' shift, as is the practice in the United States at the present time. After the reduction in hours in that year, the company endeavored to increase the amount of work, and this led to the strike of 1890. With the disruption of the union and the adoption of profit-sharing, the work was increased to such

an extent that some of the stokers ultimately complained of their inability to accomplish it in the eight-hours' shift. The company then offered them the option of going to the twelve-hour day, at the same time increasing the amount of work one-fifth and the amount of pay in the same proportion. This proposition was accepted in two of the stations, and declined in others, as already stated. By this change to the twelve-hour system the labor cost of carbonizing coal was not changed, but the retort-house men were able to earn 20 per cent. more money, to work more deliberately and to have a longer period of rest between charges. This accounts for the standard of six hours, or three-quarter of the eight-hour shift, devoted to work, and about eight hours, or two-thirds of the twelve-hour shift. It also accounts for the lower rate of wages per hour, as shown in the preceding table, where the eight-hour stokers receive 9d. per hour and the twelve-hour stokers 7¼d. per hour. In the eight-hour shift their daily wages are 6s. and in the twelve-hour shift they are 7s. 3d. The chairman of the company thinks that the men would prefer to work two shifts in winter, because after the day shift quitted work at 2 P. M. the men were not wanted at home, and they would be better off at work than elsewhere; but he thought they might prefer three shifts in summer, when they could go out of doors for recreation. This is the system at the Rotherhithe station, although, he says, the men at present seem to dislike the three-shift system in summer, because it lessens their pay.

The question of the amount of work done in the retort-houses at Manchester was dealt with at great length and in detail at meetings of the Manchester Institution of Gas Engineers, held at Manchester in February and October, 1904, and reported in the Journal of Gas Lighting, March 1 and November 29, 1904. The discussion was concerned with a comparison of "inclined retort installation" and "horizontal retort installation." It grew out of a paper presented by Mr. John Newbigging, the engineer in charge of the Manchester undertaking, in which he showed that the cost of labor in the retort house per ton of coal carbonized was only 13.58d. at the Gaythorn station with inclined retorts, as against 18.47d. at the Bradford Road station with horizontal retorts. The corresponding weights of coal carbonized per man per shift were 4 tons 13 cwt. at Gaythorn and 3 tons 8 cwt. at Bradford Road. The statistical tables which he offered were as follows:

*Gaythorn Station—Inclined Retort Installation.*
*Labor in Carbonization.*

| *No. of Men.* | *Occupation.* | *Rate of Pay Per Shift.* | | *Amount of Wages.* | | |
|---|---|---|---|---|---|---|
| | | *s.* | *d.* | £. | *s.* | *d.* |
| 1½ | Foremen | 7 | 6 | .. | 11 | 3 |
| 3 | Patchers | 5 | 7 | .. | 16 | 9 |
| 2 | Enginemen and breakers | 4 | 9 | .. | 9 | 6 |
| 6 | Chargers | 5 | 9 | 1 | 14 | 6 |
| 3 | Chargers' Assistants | 5 | 3 | .. | 15 | 9 |
| 18 | Drawers | 5 | 3 | 4 | 14 | 6 |
| 3 | Firemen | 5 | 3 | .. | 15 | 9 |
| 1 | Fireman's Assistant | 3 | 10 | .. | 3 | 10 |
| 2 | Cleaning mains | 3 | 10 | .. | 7 | 8 |
| 1 | Coal conveyor | 4 | 6 | .. | 4 | 6 |
| 40½ | Total cost of carbonization | .. | .. | 10 | 14 | .. |

Cost of labor within the retort house per ton of coal carbonized, exclusive of coke..... 1*s.* 1.58*d.*
Weight of coal carbonized per man per shift..... 4 t. 13 c. 1 q. 9 lbs.
Actual duration of physical labor during shift of eight hours, charging and drawing retorts and other incidental work..... 3½ hours.

*Bradford Road Station, Horizontal Retort Installation.*
*Labor in Carbonization.*

| *No. of Men.* | *Occupation.* | *Rate of Pay Per Shift.* | | *Amount of Wages.* | | |
|---|---|---|---|---|---|---|
| | | *s.* | *d.* | £. | *s.* | *d.* |
| 1½ | Foremen | 7 | 6 | .. | 11 | 3 |
| 9 | Firemen and two extra fires | 5 | 3 | 2 | 9 | .. |
| 24 | Machine Men | 5 | 9 | 6 | 18 | .. |
| 48 | Machine Attendants | 5 | 3 | 12 | 12 | .. |
| 3 | Chippers | 5 | 3 | .. | 15 | 9 |
| 6 | Patchers | 5 | 7 | 1 | 13 | 6 |
| 7 | Stackmen | 5 | 3 | 1 | 16 | 9 |
| 4 | Sweepers and Oilers | 2 | 4 | .. | 9 | 4 |
| 1½ | Compressed Air Enginemen | 5 | 3 | .. | 7 | 10 |
| 6 | Engine and Breaker Men | 4 | 9 | 1 | 8 | 6 |
| 110 | Total cost of carbonization | .. | .. | 29 | 1 | 11 |

Cost of labor within the retort house per ton of coal carbonized, exclusive of coke..... 1*s.* 6.47*d.*
Weight of coal carbonized per man per shift..... 3 t. 8 c. 2 q. 25 lbs.
Actual duration of physical labor during shift of eight hours, drawing and charging retorts and other incidental work..... 4½ hours.

In the discussion of this paper it was contended by critics that the apparent advantages of inclined retorts at Manchester were due to the excessive number of men employed at the horizontal retorts. The engineer of the Sheffield company said:[1]

"With regard to the number of men employed for the horizontal retorts at Manchester, comparing it with Sheffield he found—ignoring such men as firemen and foremen and the coke handlers, who would be more or less common to either system—for dealing with 378 tons he had practically 99½ men. In his case, to deal with 420 tons of coal, he had 59 men. In Mr. Newbigging's case, the coal handled per man worked

[1] Journal of Gas Lighting, November 29, 1904, p. 696.

out 3.8 tons; whereas in his case it worked out at 7.1 tons, so that Mr. Newbigging had 87 more men to do the same amount of work as they did at Sheffield."

Another engineer said:[1]

"There was somebody to blame for having this large number of men on the stoking machines; and it made it hard on gas engineers outside with their men pointing to Manchester having double the number of men for the same amount of work that they had to do."

The engineer of the Blackburn Municipal Gas Works said[2] that

"the managers of corporation works could not hope to compete with works such as Mr. Morrison's (Sheffield), under the management of a company. In corporation works they had a certain amount of Socialist element on various Councils, which militated very considerably against the working cost."

The engineer of the Blackburn Municipal Gas Works said[2] comparison was made for his committee at Manchester as to the wages paid in five other representative towns, and it was found that the carbonizers performed 13¼ per cent. less work and were paid 4½ per cent. more wages.

On the visit of our Commission to Manchester, Mr. Newbigging reinforced the foregoing statements by saying that he had 30 per cent. more retort-house men than was necessary compared with other places, but he would not admit that they were more than necessary when taking into account the hardship of the work and a generous regard for the welfare of the men. At the above meeting of the Gas Institution he had said that, whatever criticisms were made on the labor conditions at Manchester, "in spite of the admitted excessive generosity on the part of the Manchester Gas Committee, there were only two places reported in 'Fields' Analysis' that showed lower labor costs, and Sheffield was not one of them."

The figures given in the preceding table, eliminating water gas, show that the labor cost at Manchester is slightly higher than the cost at Sheffield and South Metropolitan, but lower than the cost in the other places. Mr. Newbigging's explanation of these results was to the effect that, in view of the restrictions placed by his committee against driving the men to harder exertion, he had recourse to the inclined retorts as entailing the minimum of machinery with the minimum of labor. A similar explanation was given by the editor of the Gas Lighting Journal in his review of the discussion, speaking, however, from the standpoint of the private companies, which the Journal represents. He said:[3]

"Mr. Newbigging's reply to his critics was a straightforward and impartial one; and no one can impeach his honesty or courtesy. One thing is strikingly plain in connection with this question of inclined and horizontal retort working at Manchester, it is that no one recognizes better than Mr. Newbigging the weaknesses and the strength of the great manufacturing works which he has under his charge. Yet with the

[1] Journal of Gas Lighting, March 1, 1904, p. 560.
[2] Journal of Gas Lighting, November 29, 1904, p. 696.
[3] Journal of Gas Lighting, November 29, 1904, p. 672.

weaknesses, the final financial costs and results are, as Mr. Newbigging is able to show, of an eminently satisfactory character; and there is no gainsaying this, that, if the weaknesses could be eradicated, the Manchester gas undertaking would stand second to none in its working costs and results. . . . In effect the choice as between one system and the other (inclined and horizontal retorts) in Manchester resolves itself, in our view, into a question of expediency, under the conditions existing there. But no one—an engineer is not likely to fall into the error—must take the figures given in Mr. Newbigging's paper as affording any basis for a general comparison as between the one system and the other; for the simple reason that, under Manchester working, the labor on the power machinery in the horizontal retort houses is extravagant and unnecessary. If it were not so, the case for inclined retorts in Manchester would—by the curtailment of labor in the horizontal working to normal conditions—be correspondingly impaired. . . . The conditions of labor and the rates of pay are admittedly excessive. and herein is the weakness of the manufacturing operations with vitiates the value of Mr. Newbigging's contribution to the general question and its usefulness as a guide to others in considering the matter in the light of their own (we will suppose) more favorable environment."

A defect in the foregoing line of argument is the fact that the wages in Manchester are the same at both the horizontal and the inclined retorts and that the hours of actual work are less at the inclined retorts than they are at the horizontal retorts.

### Tramways.

The principal effect of the change to municipal ownership of tramways is seen in the reduction of the hours of labor. In Glasgow, in 1894, at the time when the municipality undertook the operation, the wages of drivers and conductors were 19s. for seven days of about fourteen hours each. The municipality at first reduced the hours to ten and increased the pay to 24s. 6d. for seven days. During the seven following years the horse cars continued to be operated, but the hours were reduced in 1899 to six days of ten hours each, and wages were kept at 24s. for the first six months' employment, but advanced to 28s. for those who had been employed three years. With the adoption of electric traction in 1901 a new schedule was put in force and this was revised in 1905. The hours were reduced to fifty-four. Under the present scale, the pay begins at 24s. for fifty-four hours and advances every six months until it reaches 31s. at the beginning of the fourth year.

In Manchester the change to municipal ownership was made at the same time as the change to electric traction, and the number of hours were reduced from an average of seventy per week to a uniform fifty-four per week. The maximum week's wages of motormen were reduced from 33s. 2d. for seventy hours to 31s. 6d. for fifty-four hours, and the wages of conductors were increased from 28s. 5d. for seventy hours to 30s. 4½d. for fifty-four hours.

The London County Council continued to operate horse cars during the period when electric traction was being installed, but the hours were reduced from seventy and eighty to sixty a week, and these continue to be the hours worked by motormen and conductors. The private companies had been paying 26s. 3d. to 42s. for seventy to eighty hours, and the County Council equalized the

pay for motormen and conductors on a graduated scale, beginning at 28s. 6d. and rising to 37s. 6d. at the end of the first year.

The accompanying table shows comparatively the hours and wages of motormen and conductors on the seven undertakings investigated. The shortest week is in Glasgow and Manchester, consisting of nine hours a day for six days; while the longest is in the three private undertakings of London, Dublin and Norwich, consisting of ten hours a day for seven days. The other municipal undertakings occupy a middle position of ten hours a day for six days.

The schedules are usually arranged so as to bring the number of hours on the car within these limits and to make the hours as nearly consecutive as possible. The policy of the municipal undertakings is to avoid overtime altogether and to guarantee one day off in seven without pay. Glasgow, however, is the only place that pays an extra rate if a man is asked to work the extra day. In the other municipal undertakings seven days' work augments the weekly earnings at the ordinary rate. On the other hand, on two of the private undertakings the men work seven days in the week in order to earn the weekly rate of pay, while on the third—Dublin—they get one day off in twelve with pay after the first year of employment.

On all of the undertakings except two the rate of pay is the same for extra duty or overtime as for regular duty. The exceptions are the London County Council, which pays 1¼ rate, and the Dublin company, which pays 1s. for an extra trip on workmen's cars in the early morning.

The table shows by comparison the maximum earnings of motormen and conductors for the regular schedule (cols. 3 and 6). This is the amount earned by the majority of the men. They begin at lower rates of pay and are advanced to this maximum in different periods of time varying from six months on the London United to three years on the Glasgow and Manchester municipal and the Dublin private undertakings. From this it will be seen that, taking into account the general level of wages in each locality, and omitting the two London undertakings, the weekly wages of motormen are about on the same level in the two municipal enterprises of Glasgow and Liverpool, and the two private enterprises of Dublin and Norwich. But these earnings are secured on the municipal systems for fifty-four hours' work, while they require seventy hours on the private systems. The weekly earnings of conductors are considerably lower in Dublin and Norwich than they are in Glasgow and Liverpool. The earnings of motormen in Manchester, considering the general level of wages, are lower than those of the other four places, but the earnings of conductors are higher than they are on the private systems.

In London the motormen of the private company earn 4s. 6d. more for seventy hours than the motormen of the County Council for sixty hours, but the conductors earn 2s. 6d. less for corresponding hours.

The foregoing applies to the weekly earnings. When we take into account the differences in the number of hours required to get the weekly earnings, we find greater differences in the resulting rates of pay per hour. Taking the men who begin as conductors at the minimum rate of pay (col. 7), the four municipal undertakings pay 5d. to 5.7d. per hour and the three private companies pay 3.6d. to 4.8d. When the conductor has advanced to his maximum rate (col. 8) he gets 6d. to 6.95d. in Liverpool, Manchester and Glasgow, against 4.5d. and 4.92d. in Dublin. In London the County Council pays 7.5d. and the private company 6d. an hour.

The motormen begin in Manchester, Glasgow and Liverpool at 5.6d. to 6d. an hour (col. 4), against 4.2d. and 4.5d. in Dublin and Norwich, but in London they begin at a higher rate with the private company (6d.) than they do with the County Council (5.7d.). When they reach their maximum (col. 5) the County Council pays them 7.5d. and the private company 7.2d. Outside London the municipalities pay 6.5d. to 7d., while the companies pay 5d. to 5.57d. In general, outside London, considering the local level of wages, the highest rates per hour are paid in Glasgow, followed by Manchester and Liverpool, while the lowest are paid in Dublin. Within London the County Council pays motormen 4.2 per cent. and conductors 30 per cent. more than the private company.

## *Tramways—Wages.*

| | Hours per Week. | Motormen. Maximum per week. | Motormen. Minimum per Hour. | Motormen. Maximum per Hour. | Conductors. Maximum per Week. | Conductors. Minimum per Hour. | Conductors. Maximum per Hour. | Holiday Allowance with Pay per Annum. | Period Required to Reach Maximum Pay. | Scale of Pay Sunday. Overtime. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | |
| | | s. d. | d. | d. | s. d. | d. | d. | | | | |
| Glasgow[1] | 54 | 31 0 | 5.60 | 6.95 | 31 0 | 5.60 | 6.95 | 5 days after 6 mos. | 8 yrs. | 1¼ time if asked to work more than 6 days in a week. | Bonus 1s. per wk. if motorman is free from accidents 6 mos. |
| Manchester[1] | 54 | 31 6 | 5.75 | 7.00 | 30 4½ | 5.50 | 6.75 | 6 days. | 3 yrs. | Ordinary rate. | |
| Liverpool[1] | 60 | 32 6 | 6.00 | 6.50 | 30 0 | 5.00 | 6.00 | 5 days after first year. | 2 yrs. | Ordinary rate. | Merit pay, 1s., 2s., and 3s. per week after 10, 20 and 30 yrs. satisfactory service. |
| L. C. C[1] | 60 | 37 6 | 5.70 | 7.50 | 37 6 | 5.80 | 7.50 | ..... | 1 yr. | Ordinary rate 1¼. | |
| Lond. United[2] | 70 | 42 0 | 6.00 | 7.20 | 35 0 | 4.80 | 6.00 | ..... | 6 mos. | Ordinary rate. | |
| Dublin[2] | 70 | 30 0 | 4.20 | 5.57[3] | 26 6 | 3.60 | 4.92[3] | 1 dy in 12 after first year. | 3 yrs. | Ordinary rate 1s. per trip. | |
| Norwich[2] | 70 | 29 2 | 4.50 | 5.00 | 26 3 | 3.75 | 4.50 | ..... | 2 yrs. | Ordinary rate. | Bonus, 20s. if motorman is free from accidents 3 mos. |

[1] Municipal.
[2] Private.
[3] Corrected by adding allowance for 1 day off in 12 on pay after first year.

### Electricity.

It has been found impossible to make a satisfactory comparison of the wages paid in electrical undertakings, on account of the wide differences in machinery, equipment, character of work, size of the stations, range of wages and names of occupations. The subdivision of labor varies greatly from place to place, and a large establishment with a minute subdivision of specialized workers may have extremely high wages for a few and extremely low for others, although the names of the occupations may be the same as those where the work is less subdivided. A careful examination of different payrolls and different stations, however, leads to the conclusion that, as in the gas undertakings, there is no predominating tendency one way or the other, and the differences depend mainly upon the differences in the general level of wages of the locality. This conclusion is supported by the statistics collected respecting firemen, whose occupation is the only one in the generating stations that is sufficiently uniform to warrant an attempt at exact comparison. This is done in the following table, showing the highest and lowest weekly wages paid to firemen:

*Wages of Firemen in Electricity Generating Stations.*

| | *Ownership.* | *Number.* | *Minimum Per Week.* | *Maximum Per Week.* |
|---|---|---|---|---|
| | | | *s.* | *s.* |
| Manchester—Electricity .. | Municipal.. | 18 | 34.96 | 43.18 |
| Liverpool—Electricity .... | Municipal.. | 67 | 32.12 | 35.69 |
| Dublin—Tramways ..... | Private.... | 6 | 25.48 | 31.51 |
| Glasgow—Electricity ..... | Municipal.. | 12 | 27.04 | 30.16 |
| Glasgow—Tramways .... | Municipal.. | 7 | 28.39 | 28.39 |
| Newcastle—"District" ... | Private.... | 17 | 36.40 | 36.40 |
| Newcastle—"Supply" ... | Private.... | 24 | 31.15 | 37.01 |
| London—St.Pancras—Electricity ..... | Municipal.. | 11 | 36.40 | 36.40 |
| London County Council—Trams ..... | Municipal.. | 14 | 33.80 | 33.80 |
| London—"Central"—Electricity ..... | Private.... | 14 | 32.63 | 40.78 |
| London—St. James—Electricity ..... | Private.... | 14 | 32.12 | 40.70 |
| London—"City"—Electricity..... | Private.... | 38 | 30.41 | 48.11 |

Corrected by adding allowances for holidays with pay.

The hours are uniformly eight per day, or fifty-six per week, and the work is uniformly connected with automatic stoking machinery. If we arrange the establishments in the order of the highest minimum wages paid to stokers we shall have an alternation of private and municipal establishments as follows::

*Minimum Wages of Firemen—Arranged from Highest to Lowest.*

| *Order.* | *Undertaking.* | *Ownership.* |
|---|---|---|
| 1 | Newcastle—District—Electricity ..... | Private. |
| 2 | St. Pancras (London)—Electricity..... | Municipal. |
| 3 | Manchester—Electricity ..... | Municipal. |
| 4 | London County Council—Tramways..... | Municipal. |
| 5 | London—"Central"—Electricity ..... | Private. |

| Order. | Undertaking. | Ownership. |
|---|---|---|
| 6 | Liverpool—Electricity | Municipal. |
| 7 | London—"St. James"—Electricity | Private. |
| 8 | Newcastle—"Supply"—Electricity | Private. |
| 9 | London—"City"—Electricity | Private. |
| 10 | Glasgow—Tramways | Municipal. |
| 11 | Glasgow—Electricity | Municipal. |
| 12 | Dublin—Tramways | Private. |

This arrangement does not take into account the local levels of wages, which would relatively raise Glasgow, Dublin and Liverpool and lower London and Newcastle, but would not change the fact of alternating private and municipal undertakings without any predominating tendency on the basis of ownership. The arrangement of maximum wages also shows a similar alternation of private and municipal undertakings:

*Maximum Wages of Firemen—Arranged from Highest to Lowest.*

| Order. | Undertaking. | Ownership. |
|---|---|---|
| 1 | London—City—Electricity | Private. |
| 2 | Manchester—Electricity | Municipal. |
| 3 | London—Central—Electricity | Private. |
| 4 | London—St. James—Electricity | Private. |
| 5 | Newcastle—Supply—Electricity | Private. |
| 6 | Newcastle—District—Electricity | Private. |
| 7 | London—St. Pancras—Electricity | Municipal. |
| 8 | Liverpool—Electricity | Municipal. |
| 9 | London County Council—Tramways | Municipal. |
| 10 | Dublin—Tramways | Private. |
| 11 | Glasgow—Electricity | Municipal. |
| 12 | Glasgow—Tramways | Municipal. |

**Machinists.**

The policy of all the municipal undertakings is to pay the trade-union scale of wages as a minimum, whether the employees are members of the union or not. In many trades, especially the building trades, where work is usually unsteady, this policy results in higher earnings for the year than the same class of labor would earn on the outside. This fact is taken into account sometimes by private companies as a reason for paying lower than the minimum trade-union rate by the day which has been fixed with regard to the chances of employment. There is another reason advanced both by the companies and some of the municipalities for paying lower than the scale; namely, the fact that the man in question is not an all-round skilled mechanic, although designated by the same term as the mechanic. This will be seen in the following table, which gives the wages of "fitters" (machinists) compared with the scale of the Amalgamated Society of Engineers for the localities. It will be seen that in all but four cases the minimum wages of occupations designated as fitters is lower than the union scale. The exceptions are Manchester gas and electricity (municipal), where the minimum is 2s. higher than the trade-union minimum; Newcastle gas (private), where the minimum is 1s. higher than the trade-union scale; and London County Council, where the minimum is the same. In all cases but four the maximum is higher

than the trade-union minimum. These exceptions are Leicester gas (municipal), Glasgow tramways (municipal), Sheffield gas (private), where the maximum is lower than the trade-union scale, and Birmingham gas (municipal), where the maximum is the same as the scale. Other skilled trades are employed in much smaller numbers than fitters, but the example of this, one of the strongest of British trade-unions, seems to be the situation of others.

*Wages of Fitters (Machinists).*

| *Undertaking.* | *Ownership.* | *Wages Per Week.* | *Trade Union Scale.* | |
|---|---|---|---|---|
| | | | *Hrs.* | *Wages Per Week.* |
| Manchester—Gas ..... | Municipal. | 38/.. | 53 | 36/.. |
| Manchester—Elec. ..... | Municipal. | 38/.. to 40/. | 53 | 36/.. |
| Birmingham—Gas ..... | Municipal. | 27/.. to 36/.. | 53 | 36/.. |
| Leicester—Gas ..... | Municipal. | 29/3 to 33/9 | 54 | 34/.. |
| Sheffield—Gas ..... | Private... | 32/.. to 36/.. | 54 | 38/.. |
| Liverpool—Elec. ..... | Municipal. | 35/4 to 44/2 | 53 | 36/.. |
| Liverpool—Tramways... | Municipal. | 36/.. | 53 | 36/.. |
| Dublin—Tramways .... | Private... | 18/.. to 38/.. | 54 | 33/.. to 36/.. |
| Glasgow—Gas ..... | Municipal. | 31/6 to 38/3 | 54 | 35/.. |
| Glasgow—Elec. ..... | Municipal. | 27/.. to 45/.. | 54 | 35/.. |
| Glasgow—Tramways ... | Municipal. | 32/11 to 34/.. | 54 | 35/.. |
| Norwich—Tramways ... | Private... | 31/6 to 33/9 | 54 | 32/.. |
| Newcastle—Gas ..... | Private... | 36/.. to 37/6 | 53 | 35/.. |
| London County Council—Tramways ..... | Municipal. | 39/.. to 41/7 | 48 to 54 | 39/.. |
| London Central—Elec... | Private... | 38/3 to 42/9 | 48 to 54 | 39/.. |
| London St. James—Elec. | Private... | 27/.. to 45/.. | 48 to 54 | 39/.. |
| London City—Elec..... | Private... | 31/6 to 50/.. | 48 to 54 | 39/.. |
| London South Metropolitan—Gas ..... | Private... | 33/9 to 48/8 | 48 to 54 | 39/.. |

This table is not in the order of wage levels.

# GENERAL HISTORY AND LEGISLATION

## British Gas Works

## (Schedule I)

By MILO R. MALTBIE

*Sources.* As Schedule I relates principally to the statutory and legal provisions affecting the undertakings examined, the most important sources are the acts of Parliament and judicial decisions. Of almost equal value are the Sessional Papers, especially in those instances where special reports have been made by select committees of Parliament, and where the evidence has been printed in full (London principally). Occasionally, a verbatim report of the proceedings before a Parliamentary committee when a private bill affecting the undertaking, usually for the grant of powers or the extension of capital, may be found, but ordinarily no record is kept, and when printed it is issued by the city or the company itself.

The records, reports and documents of the city department or of the company, as the case may be, often contain much of value, especially those issued when the undertaking was started or when changes in management were actually made or mooted. In the case of municipal plants or when a transfer of the undertaking from the company to the city is being considered, the council minutes are useful.

The principal secondary sources which are of such high standing as to be recognized as authentic in every respect, are:

Bunce: "History of the Corporation of Birmingham." 3 vols.

Bell and Paton: "Glasgow: Its Municipal Organization and Administration."

Corporation of Glasgow: "Handbook on the Municipal Enterprises."

Hudson, editor: "The Manchester Municipal Code." 6 vols.

Storey: "Historical Sketch of some of the Principal Works and Undertakings of the Council of the Borough of Leicester."

Michael and Will: "The Law relating to Gas and Water." Fifth Edition.

Reeson: "The Acts relating to the Supply of Gas and Water." 1902 Edition.

Rawlinson and Johnston: "The Municipal Corporations Acts and other Enactments. . . ." Ninth Edition.

In each town there was usually a considerable amount of pamphlet and periodical literature which threw some light upon the situation.

To supplement the data obtained from the above sources, interviews were had with the principal city officials, officers of the companies, American consuls, and citizens connected in no way with the company or the municipality.

**Principal Acts of General Application.**

Companies Clauses Consolidation Acts, 1845-1889.
Companies Acts, 1862-1900.
Lands Clauses Consolidation Acts, 1845-1895.
Gas Works Clauses Acts, 1847, c. 15; 1871, c. 41.
Gas and Water Facilities Acts, 1870, c. 70; 1873, c. 89.
Sale of Gas Acts, 1859, c. 66; 1860, c. 146.
Borough Funds Act, 1872, c. 91.
Public Health Act, 1875, c. 55.
Conspiracy and Protection of Property Act, 1875, c. 86.
Employers Liability Act, 1880, c. 42.
Workmen's Compensation Acts, 1897-1900.
Municipal Corporations Act, 1882, c. 50.
Burghs Gas Supply (Scotland) Acts, 1876, c. 49; 1893, c. 52.

**Acts Applicable to London only.**

Metropolis Gas Acts, 1860, c. CXXV; 1861, c. LXXIX.
City of London Gas Act, 1868, c. CXXV.
London Gas Act, 1905, c. CLV.

**Individual Undertakings.**

*Birmingham* (Corporation) Gas Act, 1875, c. CLXXVIII.
Birmingham Corporation (Consolidation) Act, 1883.
*Glasgow* Corporation Gas Acts, 1869, c. LVIII; 1871, c. XXXV; 1873, c. CXLVIII; 1882, c. CXC; 1888, c. XXIII; 1891, c. XC.
Glasgow Gas Company's Acts, 1817, c. XLI; 1822, c. LXXX; 1825, c. LXXX; 1857, c. XXXV; 1863, c. VII.
Glasgow City and Suburban Gas Company's Acts, 1857, c. LXXX; 1865, c. II.
Glasgow Corporation Gas Order, 1873.
Glasgow Corporation (Tramways and General) Order Confirmation Act, 1901, c. CLXXIX.
Glasgow Corporation (Gas, etc.) Order Confirmation Act, 1902, c. CLXXXV.
Glasgow Corporation (Sewage, etc.) Act, 1898, c. CCXLIII.
Glasgow Corporation (Gas and Water) Act, 1899, c. CLXII.
Glasgow Corporation (Gas, etc.) Confirmation Act, 1902, c. CLXXXV.
Glasgow Corporation Order Confirmation Act, 1905, c. CXXVII.
Glasgow Corporation Loans Act, 1883, c. CVI.

Glasgow Corporation Acts, 1898, c. CCXLII; 1899, c. CLXII and CLXVI.

*Manchester* Gas Acts, 1824, c. CXXXIII; 1830, c. XLVII; 1831, c. XVI; 1837, c. CXII.

Manchester Improvement Acts, 1828, c. CXVII; 1854, c. XXVIII; 1858, c. XXV.

Manchester Corporation Acts, 1843, c. XVII; 1882, c. CCIII; 1894, c. CCIX.

Manchester General Improvement Act, 1851, c. CXIX.

Manchester Overseers Act, 1858, c. LXII.

Manchester Corporation Waterworks and Improvement Act, 1875, c. CLXI.

Manchester Corporation Acts, 1891, c. CVII; 1901, c. CXCIII.

Manchester Gas Orders, 1896, c. CX; 1899, c. XXVIII.

*Leicester* Gas Acts, 1860, c. V; 1873, c. XI; 1877, c. L.

Leicester Corporation Gas and Water Transfer Act, 1878, c. CXXXII.

Leicester Corporation Acts, 1879, c. CC; 1884, c. XXXII; 1897, c. CCXVIII; 1902, c. CXCVII.

Borough of Leicester Order, 1891, c. CCXI.

*London—South Metropolitan* Gaslight and Coke Company's Acts, 1842, c. LXXIX; 1865, c. XIV; 1869, c. CXXX; 1876, c. CCCXXIX.

South Metropolitan Gas Acts, 1881, c. CLXXII; 1882, c. XXXVIII; 1896, c. CCXXVI; 1897, c. V; 1900, c. CLXII; 1901, c. CLXXXIX; 1902, c. CVIII; 1905, c. XXXVIII.

*Newcastle-upon-Tyne and Gateshead* Gas Acts, 1864, c. CXLVIII; 1867, c. XXX; 1873, c. CXVII; 1879, c. CLII; 1896, c. CXXXII; 1901, c. LVIII.

*Sheffield* Gas Acts, 1855, c. XIV; 1866, c. CXCIII.

Gas Orders Confirmation Acts, 1882, c. XCIX; 1890, c. CCVI; 1893, c. CXLV.

### A—HISTORICAL AND GENERAL.

A 1. Date when this establishment began to sell gas.

A 2. If it is a municipal plant, was gas being supplied by private company when city began operation?

A 3. Character of *original* organization, whether individual, firm, corporation, municipal or other form.

A 4. Character of *present* organization, whether individual, firm, corporation, municipal or other form.

| *Municipalities.* | *Origin of Company.* | *Date of Municipalization.* |
|---|---|---|
| Birmingham | 1st Co., 1817<br>2d Co., 1825 | Sept. 1, 1875 and Jan. 1, 1876. |
| Glasgow | 1st Co., 1817)<br>2d Co., 1843) | June 1, 1869 |
| Manchester | (See note.) | 1817 |
| Leicester | 1821 | July 1, 1878 |

*Companies.*

| | | |
|---|---|---|
| South Metropolitan | 1833 | ..... |
| Newcastle and Gateshead | 1817 | ..... |
| Sheffield | 1818 | ..... |

With the exception of Manchester all the undertakings were originally in the hands of private companies. A few small plants were also built outside of Manchester, when the city did not cover such a large area as at present, but when the city had extended its mains so that it could reach the areas supplied by these companies, they were taken over by Manchester, to the satisfaction both of the consumers and of the companies, who were not able to compete successfully with Manchester. The two most important cases were the purchase of the Provincial Portable Gas Company in Hulme in 1857 and of the Droylsden Gas Company in 1869.

A 5. Date and character of all changes in ownership since origin.

A 6. State method of making each change.

A 7. State terms of each arrangement.

A 8. State fully reasons for each change.

*Birmingham.* Gas mains were first laid in the streets of Birmingham in 1817, and two years later a company was incorporated by act of Parliament, under the name of the Birmingham Gas Light & Coke Company. At this early stage of the gas industry no one thought of treating it as a monopoly. Consequently when a second company applied to Parliament in 1825 for an act of incorporation, and stated as a reason why a franchise should be granted to it also, that Birmingham was then but partially lighted with gas and that great public advantage would accrue from the construction of another plant, the local authorities and Parliament were easily persuaded. Within the next fifty years each company secured other acts of Parliament authorizing the issue of additional capital, the expansion of their plants and the extension of the areas of supply to include not only Birmingham but some fifteen other local areas nearby.

Municipal ownership was first proposed in the town council by Mr. Joseph Chamberlain, then mayor, in January, 1874. In his speech supporting his motion that negotiations with the companies be opened, Mr. Chamberlain gave the following reasons: All monopolies which are sustained in any way by the state ought to be in the hands of the representatives of the people, by whom they should be administered and to whom their profits should go. The duties and responsibilities of the local authority should be increased so as to make it a real local Parliament, supreme in its jurisdiction. The cost of the public improvements which had been or ought to be undertaken, such as street paving, sewage disposal and improvement of sanitary conditions, was very large and the council had been obliged to drop several schemes which were necessary to protect the health of the town, because the

money could not be found for their execution. If all the expenses for the greatly-needed improvements were to be raised by taxation, the burden would become intolerable. The purchase of the gas works and the transfer of the profits from the shareholders to the city treasury would relieve this burden and allow the city to proceed with the needed public improvements. The union of the two undertakings would permit of many economies, such as the substitution of a single for the double set of mains, the reduction of management expenses, and of fixed charges. Complete jurisdiction over the streets would also be secured to the city. Mr. Chamberlain further assured the council that preliminary conferences with the two companies had already been held, and that they were willing to sell their undertakings if satisfactory terms could be arranged. The resolution that negotiations be opened was adopted by a vote of 54 to 2.

The agreement finally reached with the Birmingham Gas Light & Coke Company provided for the transfer of the undertaking to the city, including all assets, rights, funds and undivided profits, and also the assumption of all contracts, agreements and accounts. In return the company was to receive £450,000, or annuities payable half-yearly of £22,500 per annum. The agreement with the Birmingham & Staffordshire Gas Light Company provided for a similar transfer of all assets and liabilities, except their reserve fund and undivided profits. In payment the company was to receive £10,906 (premium upon sale of shares) and perpetual annuities payable half-yearly, equal to the maximum dividends payable by the company on their capital, amounting to £58,290, equivalent to 10 per cent on £320,400 and 7½ per cent on £350,000.

While the negotiations were under way accountants were appointed to examine the records of the companies, and reported their status on December 31, 1873, to be as follows:

The Birmingham Gas Light & Coke Company.

| | |
|---|---|
| **Capital Raised—** | |
| Bearing dividend of 9 per cent per annum | £99,200 |
| Bearing dividend of 7½ per cent per annum | 200,800 |
| Premiums on Shares | 3,176 |
| Loans bearing interest at 5 per cent per annum | 250 |
| Loans bearing interest at 4½ per cent per annum | 78,350 |
| Loans bearing interest at 4½ per cent per annum | 5,100 |
| | £386,876 |
| **Capital Outlay—** | |
| Works | £180,076 |
| Mains | 107,129 |
| Meters, Lamps, Services, etc | 56,908 |
| Stabling | 2,502 |
| | £346,615 |

The Birmingham & Staffordshire Gas Light Company.

| | |
|---|---|
| Capital Raised— | |
| Bearing dividend at the rate of 10 per cent per annum. | £320,400 |
| Bearing interest at the rate of 7½ per cent per annum. | 287,500 |
| Premiums on Shares not bearing dividend..... | 10,906 |
| Loans bearing interest at 4 per cent per annum..... | 61,975 |
| | £680,781 |
| Capital Outlay— | |
| Cost of Works ..... | £618,746 |

From these reports it appears that the two companies had a combined capital outlay of £965,361 for which the city finally paid £509,701 in cash, and perpetual annuities payable semi-annually amounting to £58,290 per annum. The capitalized value of the annuities can only be estimated, but on a 4 per cent basis it would be £1,457,250; if capitalized upon a 3 per cent basis—approximately their present market value,—the amount would be £1,943,000. In other words, for plant and equipment carried upon the books of the companies at £965,361 the city paid in cash or its equivalent, £1,966,951 upon a 4 per cent. basis for the annuities, or £2,452,701 upon a 3 per cent basis.

The resolution approving the agreement was adopted by a vote of 46 to 1 in the town council and at a meeting of the ratepayers 2,567 to 1,264. A bill confirming the agreement was introduced at the following session of Parliament in 1875, and met with opposition from the local authorities of certain outside areas supplied by the companies, and from a few large consumers in Birmingham. The former asked that they be given power to purchase the portions of the undertakings in their areas, or that the profits should be given to the districts in which they were earned, or applied to the reduction of the price of gas; that a maximum price of 3s. 6d. should be fixed, and that certain other provisions of less importance should be inserted in the bill. They also objected to the clause for a reserve fund of £100,000 as being excessive, and to the price paid the Staffordshire Company as being too high.

The consumers who appeared asked for a maximum price, a differential scale, so that the consumer would get a low rate and a high candle power. The bill was finally amended, authorizing purchase by local authorities (see inquiry D 8 below), fixing a uniform price within and without the city of Birmingham (see inquiry D 15 below), and making certain other changes as requested. The bill so amended was passed by both houses of Parliament and received Royal assent on August 2d, 1875. The transfer of the undertakings of the two companies took place on September 1st. Several of the outside local authorities subsequently exercised the power of purchase and took over the mains and pipes in their areas.

*Glasgow.* The first gas company was the Glasgow Gas Light Company, incorporated by act of Parliament in 1817. The Act of 1825, which authorized the company to increase its capital, limited its dividends to 10 per cent until another company should be established. The company did not use its powers to suit the public, and it was generally believed that it made more than 10 per cent. Five persons appointed by a public meeting in 1835 reported that a large sum—over £50,000—belonged to the gas consumers, and warned the company that if it persisted in its attitude a new company would be formed. The company paid no attention to this warning and in 1843 a new company was created by Parliament. This remedy afforded only very temporary relief, and soon the public was dissatisfied with both companies, maintaining that the quality of the gas was bad and the price high.

An investigation was made after a public meeting at which the lord provost presided in 1859, and it developed that the loss of gas by leakage (unaccounted for) had been about 23 per cent each year for the last three years in the system belonging to the old gas company. The report prepared suggested a new company —a third competing company—as the remedy. After much continued discussion, the town council took the matter up and attempted to reach an agreement with the companies for the purchase of their plants, but without success; and it was finally settled by Parliament when the bills of the companies for authority to issue more capital and of the town council for the establishment of a new municipal plant were before it. Evidently Parliament saw better than Glasgow did the futility of further competition; it had been through the question of competition in the case of the London companies and knew what bad results it had produced there. Parliament refused, therefore, to approve competition by a third company or by the city, but urged the companies to accept the terms offered by the city and sell out. An agreement was finally reached, a bill drawn and passed by Parliament validating the transfer as of date June 1, 1869.

The reasons for municipalization were that the people were generally dissatisfied with the management of the two companies. They thought the prices were too high and objected to the frequent tearing up of streets and the duplication of pipes in the streets supplied, for each company had laid its pipes practically to the same buildings. It was foreseen that if one plant were substituted for two, there would be great saving in many directions and less inconvenience to the public. There was also a growing opinion that monopolistic services and those using the streets should be managed by the public. Financial reasons did not seem to be prominent.

According to the terms of the Act of 1869, Glasgow gave to the shareholders of the two companies perpetual annuities amounting to £34,762 10s. being at the rate of 9 per cent upon £300,000 of stock, which might receive a maximum dividend of 10 per cent

yearly, and of 6¾ per cent upon £115,000 of 7½ per cent maximum dividend stock. In addition the city assumed all the liabilities, including mortgages amounting to nearly £120,000. It received in return all the property, rights and other assets. In view of the fact that the shareholders were virtually guaranteed for all time a rate of profit within 1 per cent on the 10 per cent stock and ¾ of 1 per cent on the 7½ per cent stock of the maximum rate allowed by their acts, one must conclude that they were very liberally treated and the city burdened with a heavy capital charge at the very beginning. Compared with the structural value of the property as indicated by the cash balance sheets of the companies, the amount paid is shown to be considerably in excess.

Balance Sheet for the Glasgow Gas Light Company, May 31, 1869.

DR.

| | |
|---|---|
| To general expenditure upon works and mains | £314,464 |
| " general expenditure upon meters | 53,378 |
| " counting house furniture | 606 |
| " minimum invested in 3 per cent annuities required by Act of Parliament | 5,000 |
| " reserve fund invested | 29,105 |
| " assets and debts due company | 44,149 |
| | £446,702 |

CR.

| | |
|---|---|
| By old stock | £150,000 |
| " new stock | 65,000 |
| " premiums on stock | 78,829 |
| " reserve fund invested | 29,105 |
| " mortgages | 70,000 |
| " bills payable | 18,476 |
| " unclaimed dividends | 329 |
| " suspense account | 4,828 |
| " revenue account of year | 26,017 |
| " revenue from accounts not rendered | 4,118 |
| | £446,702 |

City and Suburban Gas Company. June 30, 1869.

ASSETS.

| | |
|---|---|
| Parliamentary expenses | £10,410 |
| Works | 125,638 |
| Meter account | 42,394 |
| Counting house furniture | 225 |
| Accounts receivable | 7,103 |
| Unsurveyed gas | 7,296 |
| Clydesdale Banking Co. (reserve fund) | 11,668 |

| | |
|---|---|
| Cash | 21 |
| Property | 4,000 |
| Stocks and materials | 6,965 |
| Pipe account | 116,460 |
| | £332,180 |

LIABILITIES.

| | |
|---|---|
| Capital stock—old | £150,000 |
| Capital stock—new | 50,000 |
| Contingent account | 5,500 |
| Mortgages | 49,541 |
| Accounts payable | 6,394 |
| Premium account | 15,005 |
| Unclaimed dividends | 79 |
| Clydesdale Banking Co. | 11,513 |
| Reserve fund account | 15,831 |
| Consumers' deposit account | 1,048 |
| Surplus reserve account | 27,269 |
| | £332,180 |

When the transfer was made, the original cost of the property taken over as shown by the books and by the above balance sheets was £532,317, for which the city gave £34,762 in annuities and mortgages of £119,265. The cash value of these annuities can only be estimated, but if they were capitalized upon a 4 per cent basis, the entire payment would be equivalent to about £988,315; and upon a 3 per cent basis—approximately the present market rate of capitalization—£1,278,000.

Since 1869 two other companies have been purchased, both in outlying districts. One grew out of the plan adopted by the city of charging slightly more for gas outside of the city boundaries than within. When the city took over the companies in 1869 it obtained power, as a result of this transfer, to supply areas beyond its boundaries and fixed the price within at 4s. 2d. and without at 4s. 4½d., or 2½d. more. This aroused dissatisfaction among the outsiders, and a company was formed to supply gas in one area outside of Glasgow, but within the area of compulsory supply. This resulted in duplication, waste and bad blood, of course. The company could not get Parliamentary authority, but the outside local authorities gave it permission to tear up the streets and lay mains so that the city of Glasgow could not prevent its operations. Glasgow justified its course upon the grounds that the outside areas were not responsible for the success or failure of the undertaking and therefore should pay more, and that they would not get gas at such a low figure as supplied by Glasgow if they had their own independent plant; and the experience of the competing company seemed to support this claim. Glasgow sought to end matters by annexation, which would have brought the rates down *ipso facto*, but the company fought it.

The dispute went on until 1891, when an agreement was reached between the city and the company, whereby the city paid £202,500 for the works. Although the company made only very modest profits—not what they could have made in other lines—the city also lost because of the unnecessary duplication of plant and mains.

*Manchester.* The first municipal gas works in England were established at Salford in 1817 by the Commissioners of Police of Manchester, Salford being at that time a part of Manchester. Such a step, at present, would require full explanation, but a century ago it did not call forth even a limited discussion of the proper scope of municipal activity. It was considered an easy and natural step from the powers and duties which had been conferred upon these Commissioners by Parliament in 1792, "for cleansing, lighting, watching and regulating the streets, lanes, passages, and places . . . ." The Commissioners had experimented with the new gas in the early years of the last century, having bought a small outfit for lighting a public building, and the people were so well pleased with this new illuminant that public meetings were held to induce the authorities to extend the works to supply gas for public lighting generally. A meeting of the ratepayers was called to consider the matter, and they voted unanimously to adopt the new mode of lighting the town, and to raise the taxes from 15d. to 18d. in the pound. To lessen the cost of lighting the streets, it was later decided to supply private persons. A price of 14s. per thousand cubic feet was fixed.

It was not long before a question arose as to whether the commissioners had exceeded their legal authority and were acting *ultra vires.* The power to construct a gas plant and sell to private persons was at best an implied power. The commissioners were given power to light the streets, and possibly it could be implied that this authorization carried with it the power to make light for public uses. But by what right could the city sell to private consumers when such sale was not necessary but only incidentally connected with manufacture for public use? In 1823 the commissioners were threatened with litigation to test their authority, and a private company was promoted to light Manchester with oil or gas. The city decided to apply at once for a special act, plainly giving the commissioners the necessary authority, and the following year the act was passed—the first statute to provide for a municipal supply of gas both for street and commercial lighting.

This Act was very broad in scope and general in its provisions. It gave the local authorities power to manufacture and distribute gas within and without the city, to sell bye-products, to purchase land, to lay mains, to break up pavements, to borrow £35,000, to use surplus profits to reduce taxes, etc. The restrictions upon the powers of the commissioners were few and unimportant. Parliament did not foresee, at this early date, the great future development of the gas industry; neither did it con-

sider that public safety and welfare demanded that restrictions should be imposed upon the city in the management of this business. The early acts are in large measure in force to-day, which fact will explain why so few of the ordinary provisions applicable to municipal plants are in force in Manchester, as the following pages will show.

The question of the wisdom of municipal operation came up a few years later in 1833. The "gas directors"—the body which had supervision of the undertaking—voted that it would be wise to sell the plant, not so much because of dissatisfaction with the results, but because it was believed that a public body ought not to go into such enterprises. The discussion went on for some time, but finally ended without action, upon the appointment of a new manager, the general opinion being that a transfer to private persons could not be justified. The question has not since been raised, and the extension of the city's plant has gone on without interruption. As it has reached suburban areas supplied by companies, these have been purchased. The only change in the management was the transfer from the police commissioners to the borough council created by charter in 1838.

The use to be made of the profits from the gas undertaking has always been a prominent subject of discussion. It first appeared when the Act of 1824 was under consideration. The town sorely needed street improvements, but it was a difficult matter to find the funds to pay for them. Many believed that the gas undertaking would yield a profit, and that it should be used for this purpose; but there was some opposition in Parliament, and hence the Act merely provided that the profits should be paid over to the police commissioners. In 1828 an act was secured allowing the profits to be used for street improvements, and subsequently for improvements of any kind. From 1817 to 1895, the surplus profits—after deducting operating charges, interest, sinking fund payments, depreciation, etc.—amounted to £2,192,351 (according to the Municipal Code), of which £166,264 were paid to the water works department to reduce water rates, and £2,026,087 for town improvements, such as public markets, sewers, street paving, buildings, etc. From 1896 to 1905 inclusive, £517,856 have been put "in aid of rates"—to reduce taxation.

Most of the legislation relative to the Manchester gas supply is devoted to the issuance of securities for capital purposes. As common in England, Parliament has not given unlimited authority in this direction, and when new works were to be constructed, application was made for further capital powers.

*Leicester.* The Leicester Gas Light and Coke Company was incorporated by c. III. of 1 & 2 Geo. IV. and authorized to supply gas in Leicester and suburbs. An act passed in 1860—23 Vict., c. V.—reincorporated the company and imposed restrictions upon it, such as limitations upon the amount of dividends that may be paid, price of gas, candle power, etc. Its powers were extended

again in 1873, but four years later when it went to Parliament with another bill, it aroused the opposition of the town council by including some 18½ acres belonging to the city in the land it wished to acquire for gas works. This also brought up the question of municipal operation, and after conferences between the representatives of the town and the gas company, an agreement was reached. The company was to be allowed to proceed with its measure, but a bill was to be introduced in the Parliamentary session of 1878 providing for the transfer of the undertaking to the municipality. As required by statute, the matter was referred to the owners and ratepayers of the borough in a special meeting assembled, and approved. Parliament endorsed it by passing a special act and the transfer was made on June 30, 1878.

Aside from the incidental reason arising from the dislike of the corporation to part with its land, the principal consideration which led to municipal purchase was a financial one. The company had been doing very well almost from the start. It had paid the maximum dividends allowed for years and yet was charging a low rate, having gradually reduced it from 12s. in 1829 to 2s. 10d. in 1877. The quality of the gas was good, the supply constant and there were few complaints against the management of the company. The council believed, however, that it could make as large profits as the company and that the municipal revenues would thereby be increased if the town worked the system. The aim was, therefore, to secure "funds in aid of rates" rather than a reduction in price or a betterment in service.

The Act of 1878 provided for the transfer to the borough council of the entire undertaking, including all the powers, properties and liabilities of the company. The mortgage of £12,700 was to be assumed by the town and to be a first charge on the revenues and secondly upon the district fund and rates. All officers and employees of the company were to hold the same positions under the city. The shareholders were to receive 4 per cent debenture stock at the following rates:

| | | *Par Value.* | | *Rate.* | | *Stock Paid.* | | |
|---|---|---|---|---|---|---|---|---|
| 3,900 | A. shares, | 50.700 | @ £32 | 17 | 2 | £128,147 | 10 | 0 |
| 6,930 | B. " | 69,300 | @ £21 | 8 | 7 | 148,504 | 2 | 6 |
| 10,000 | C. " | 100,000 | @ £20 | 0 | 0 | 200,000 | 0 | 0 |
| 20,830 | | £220,000 | | | | £476,651 | 12 | 6 |

In addition £4,000 were paid to directors for loss of position, making in all roughly £493,000.

The town started, therefore, with a plant standing on the company's books at not more than £220,000, for which it paid £493,000. Just what this plant was worth is unknown, but it probably cost the city at least £270,000 more than its structural value.

The stock issued in payment was 4 per cent, 2 per cent semi-annually, a first charge upon the revenue of the undertaking after

the mortgages, and secondly upon the district fund and rates. The corporation may redeem at par at any time.

*London—South Metropolitan.* The first gas company in London was incorporated in 1810, and there were already a number of companies in the field when the South Metropolitan was started, in 1833, as a cannel gas company. It did not secure an act of incorporation until 1842, but at that time local authorities were supposed to have the power of issuing permits to lay mains in the streets without special authorization by Parliament. Competition was believed to be the life of trade, and for a time every new gas company was welcomed as a means of securing gas at a lower figure. There were already two competing companies south of the Thames when the South Metropolitan entered the field and started to play its part in the gas war that was then waging. Each company attempted to lay its mains in every street and it would have consumers at any cost. The streets were torn up in every direction. Capital was wasted in useless duplication of plants and mains. The loss by leakage was large and serious accidents sometimes happened. Prices were cut when necessary, but where there was no competition they were kept at a high figure.

The consumer, apart from the inconvenience due to the disorderly condition of the streets, watched the inter-company fight with a certain amount of glee and profit, for prices were undoubtedly lower than they were, or would have been were there no competition. But this could not go on forever, and in the early fifties the companies began to recognize their folly, and proceeded to apportion the district south of the Thames among the four then competing for supremacy. This districting of the city was not fixed by act of Parliament, and there was therefore no legal method of enforcing the agreement. Fearing that a new company might come in or that a rate war might again break out, a bill was introduced into Parliament to legalize the arrangement, but the opposition was too strong. The companies had advanced prices from 25 to 50 per cent after the agreement had been made, and the consumers foresaw that if any such scheme were legalized without some adequate system of public regulation or control, they would be at the mercy of the gas companies.

The situation became so serious, having been extended to the whole of London, that a Parliamentary Committee was appointed to hear evidence and report what plan should be adopted. It reported in 1859 that competition was inadvisable, that districts should be assigned to the several companies, that a maximum price should be fixed at 4s., that profits should be limited to 10 per cent unless the price be reduced, that a minimum candle power should be prescribed, and that permanent inspectors should be appointed to see that the Act was carried into effect. The companies objected to the conditions imposed, but as Parliament refused to grant monopoly rights without strict supervision, the companies submitted rather than lose so valuable a privilege, and

the bill of 1860 became a law. Other acts were passed in the sixties and seventies to remedy defects which practice developed, ending with the adoption of the sliding scale, auction clauses, etc., in 1876.

Although each company kept within its own district and there was practically no competition, there were still certain advantages to be obtained from a uniform control of all the gas works south of the Thames. The South Metropolitan appeared to be the stronger financially, and gradually absorbed in the years from 1879 to 1884 all of the companies south of the river, with the exception of the Gas Light and Coke Company which supplied a small area in the west. The consolidation of these three companies with the South Metropolitan was legalized by Orders in Council which made no important changes in the powers, organization or finances of the various companies. The chief gains and the reasons for amalgamation were the financial gains due to the reduction of management expenses, the better contracts for supplies and materials, the elimination of complaints being certain areas were supplied more cheaply than others, and the union of powers held by the different companies so that each could take advantage of those conferred upon the others.

*Newcastle.* Gas was first supplied in Newcastle January 10th, 1817, by "The Fire Office"—a fire insurance association. This early beginning was, of course, extremely modest, and only a few shops, theatres and halls were first illuminated.

The policy of the Fire Office was by no means progressive, and little was done within the next ten years to extend the use of gas; indeed, the supply was so bad that a public meeting was called and a new company formed having a capital of £20,000. This company, following the example of the Fire Office, possessed no Parliamentary authority, but obtained from the town council permission to open the streets. The Fire Office immediately gave up the competition and sold its plant to the new company, which at once began to extend its mains. It resolved voluntarily to limit its dividends to 10 per cent and to expend any surplus beyond this amount in lighting the streets and reducing the price to the consumer.

In 1828 the Newcastle Subscription Gas Company was formed, and in 1830 purchased the undertaking of the old company which confined its operations to Newcastle. In 1838 the Gateshead Gas Company was formed, which took over a small existing gas works in Gateshead. The two companies amalgamated and became the Newcastle-upon-Tyne and Gateshead Union Gas Light Company.

The satisfactory financial returns led to the formation of still another company which immediately applied to the town council of Newcastle for permission to lay mains in the streets. The proposal led to considerable discussion both within and without the council, and contained such favorable terms both for street and commercial lighting that the old company was obliged to offer a reduction of price to keep out the new company.

During the discussion it was proposed that the city should follow the example of Manchester and take the supply of gas into its own hands. Negotiations were opened with the company for the purchase of the existing works, and an act secured from Parliament authorizing the council to borrow money not to exceed £100,000 and to purchase any gas works already or thereafter to be erected within the borough. It was impossible, however, to reach an agreement with the company as to the price of the undertaking, the town being unwilling to pay what the company demanded for its plant. It was even proposed that new works should be built and that the town should compete with the company. However, neither purchase nor the construction of a new plant was finally decided upon, and the private company was left in the field, although somewhat chastened by its recent experience.

As the company was operating without any competitor and was subject to practically no governmental supervision or regulation, the tendency towards lethargy and disregard of the wishes of the consumers was always very strong. The field was also so financially attractive that in 1862 another company applied to Parliament for powers to supply gas. At this time complaints were numerous as to the quality of the gas and the service that was being given. The Parliamentary Committee heard the evidence and although it voted at first to give the new company statutory authority, the scheme was finally dropped. It became evident, however, that the old company must do something or a competitor would be admitted. As a result prices were lowered and a bill introduced in Parliament to incorporate the company and give it statutory powers, which was done by an act passed in 1864.

Since 1864 several acts have been passed, the principal provisions of which are set forth in this Schedule. Prior to 1864 the company was operating practically independently of all legislation; it had no Parliamentary authority to open streets or supply gas, but having been given permission by the borough it was practically safe from disturbance as long as Parliament did not authorize a competing company. Prior to 1864 there were no statutory provisions regarding dividends, price, quality of service, or method of supply. With the Act of 1864 the company ceased to have a free hand and became subject to a certain amount of supervision. This was the price which it paid for a virtual guarantee of non-interference, for Parliament quite generally after the middle of the last century refused to sanction the establishment of a new company within an area already supplied by a gas company acting under Parliamentary authority.

*Sheffield.* The first company in Sheffield was formed in 1818 with a capital of £40,000. The price of gas was kept at 12s. per 1,000 cubic feet until 1834, when the threatened formation of a new company forced a reduction to 8s. and finally to 5s., when the new company finally began to distribute in 1837 at this figure.

Another reduction was made to 4s. 2d., after an advance to 8s. 4d., in 1843. An amalgamation was brought about in 1844 resulting in the formation of the Sheffield United Gas Light Company, with a capital of £135,000 and borrowing powers of £45,000 more.

But this company was not left long in possession of a monopoly. Still another company was started in 1850, called the Gas Consumers' Company, formed under the Joint Stock Companies Act. Work was begun in 1852 and immediately another gas war broke out. Street fights between the employees of the two companies over the right to lay mains in the streets were common. Suits and counter suits were brought in the courts and the strife went boisterously on until the new company decided to apply to Parliament for statutory rights to supply gas in the city. It was contended by the old company that its competitor had no right to put mains in the streets as it had not been authorized to supply gas by Parliament. When the new company came before a committee of the House of Commons, amalgamation was again urged, resulting in the enactment of the 18th Vict. c. XIV. The cost of the inter-company war had been great, £15,000 having been spent on litigation alone. The committee said that there should be one company in Sheffield, provided due security be given for the protection of the public. The system of public regulation and control adopted is set forth in the subsequent pages.

A 9. Has there ever been municipal ownership and private operation of plant?

No, in none of the cases, except in Glasgow, where the city owns chemical works in connection with each of its plants, where tar and liquor are treated. It does not operate these plants, but rents them for 5-year periods to private persons, who agree to pay the city for the tar and liquor distilled, taking the entire output. Originally at least one of the chemical works was in the hands of a private firm, but it was found that other bidders were very much handicapped. Having no works close by the gas plant, they could not handle the residuals as economically. The city took over the chemical works in order to put all bidders upon the same basis, and now there is always genuine competition for the leases, which do not fall in at the same date. The reasons urged why the city does not treat its own tar and liquor are that the business is more or less speculative and uncertain; that prices vary greatly and make it hazardous; that there is need for unusual financial incentive; and that the best results are not likely to be attained where the management is paid fixed salaries under such conditions.

A 10. Is the general sentiment favorable or unfavorable to the present system of ownership and operation?

Generally favorable in all.

A 11. What is the attitude of the press?

In every case it is favorable. Little is said except to report any important matter as it happens to come up.

A 12. State current objections to present system.

*Birmingham.* Certain persons, few in number, object to municipal competition with outside gas fitters, retailers of fittings, etc. Some object to payment of such large sums "in aid of rates" to relieve taxation.

*Glasgow.* None found.

*Manchester.* There is talk upon the part of some consumers that they are charged too much, that if there were not such a large sum put "in aid of rates" the price could be reduced.

*Leicester.* Outside areas sometimes say their price is too high and want prices reduced.

*London—South Metropolitan.* The only ones, save those ordinarily found almost everywhere, are those relating to labor matters which are dealt with in Schedule II.

*Newcastle and Sheffield.* None to speak of, except the ordinary complaints which arise from occasional lapses and inaccurate gas meters.

A 13. Do the citizens take an active interest in the management of the plant?

*Municipalities.* Not generally, for there are few matters now before the department of general interest. When anything unusual comes up the public has been quick to notice and comment. In Manchester there is considerable discussion from time to time upon the question of profits vs. lower charges. In Leicester groups of citizens and clubs frequently request to be shown through the works and they are always accommodated. General interest seems to be greatest there.

*Companies.* No, of course.

A 14. Have there ever been competing gas companies in the city? See answers to inquiries A 5-8.

A 15. Are there competing companies now? None.

A 16. If private companies have consolidated, give dates and methods briefly. See answers to inquiries A 5-8.

A 17. Population of city at last national census, 1901.

A 18. Estimated population January 1, 1906, of area of supply.

| *Towns.* | A 17. | A 18. |
|---|---|---|
| Birmingham | 522,204 | 800,000 |
| Glasgow | 760,423 | 1,000,000 |
| Manchester | 543,872 | 750,000 |
| Leicester | 211,579 | 250,000 |
| London | (See below) | 1,500,000 |
| Newcastle and Gateshead | 325,216 | 520,000 |
| Sheffield | 380,793 | 470,000 |

In each instance, except London, the undertaking supplies areas outside of the boundaries of the town in which it is situated. The estimated populations of these areas are: Birmingham,

240,000; Glasgow, 210,000; Manchester, 120,000; Leicester, 13,000; Newcastle and Gateshead, 150,000; Sheffield, 25,000. The South Metropolitan Company supplies only a part of London, but nearly all south of the Thames.

The differences between A 17 and A 18 after deducting the populations for outside areas may be accounted for in two ways: by natural increase and by annexation of suburban districts.

A 19. Are there electrical works in the city which compete with gas?

A 20. Were these public or private?

A 21. If private, were they owned or controlled by the same persons controlling gas works?

*Birmingham, Glasgow, Manchester.* They are owned by the municipality, and there is keen competition between the two committees which administer them.

*Leicester.* Yes. The two are under the management of one committee, but they have separate engineers.

*London—South Metropolitan.* Yes. Some are public and some private. The latter are not connected with the gas company.

*Newcastle.* Yes. They are privately owned, but are not connected with the gas company.

*Sheffield.* Yes. They are owned and operated by the borough.

**B—GENERAL FINANCIAL POWERS OF MUNICIPALITIES.**

B 1. Does the city have power, for the construction or acquisition of gas works, to raise money by the issue of securities?

*Birmingham, Manchester.* Yes, but each new issue of securities must be approved by the Local Government Board, which fixes the period within which the loan must be repaid, or by Parliament.

*Glasgow, Leicester.* Yes, but only when authority has been granted by Parliament and then the specific amount has been stated. If more is needed, another act or provisional order must be secured.

B 2. Does the city have power, for the construction or acquisition of gas works, to raise money by taxation?

No, in no instance.

B 3. Does the city have power to raise money by taxation to meet a deficit? If so, what satutory limit is fixed?

*Birmingham, Leicester.* Yes. There is no limit.

*Glasgow.* No, except to provide for payment of annuities issued when the plants were purchased in 1869; the limit is 6d. in the pound. Contributions may also be made for any purpose from the "Common Good," but this fund receives nothing from taxes.

*Manchester.* No, except to pay loans which were issued upon the tax rate as security. There is no limit to the amount which might be raised for this purpose if the plant were insolvent.

B 4. What is the limitation upon the general taxing power of the city?

*Birmingham, Manchester, Leicester.* None, except that no function may be exercised by the municipality, and no taxes levied for its exercise, which has not been conferred by Parliament.

*Glasgow.* Limits have been fixed for every purpose and these may not be exceeded.

B 5. State fully step by step the procedure which must be followed and the requirements which must be met before the city may construct or acquire a plant; also source of each provision, whether state constitution, statute or ordinance. Note particularly requirements as to initiation of proposal, special action by city authorities before its adoption, mayoralty veto, referendum, publicity, making of appropriations, bond issues, and approval of scheme by courts or state authorities.

*Municipalities.* The following summary is applicable to all towns except in some minor details which it is not necessary to specify here:

Origin. There are no statutory provisions regarding the initiation of any proposal relating to the undertaking. It may come from any one, or from any member of the council, but if it originates outside the committee in charge of the undertaking, it is referred to the committee if considered of importance by the council. A suggestion may also be made by any member of the committee; but ordinarily any proposal regarding a plant already in existence originates with the manager, or engineer, or one of the staff. In the case of a new undertaking the suggestion may come from a variety of sources, and is usually referred to a special committee for investigation and report to the council.

Consideration in Committee. After the proposal has been thoroughly considered by the manager and his staff (if an undertaking already in operation), or by persons called into advise (if a new undertaking entirely), and the report has been presented to the committee in charge, it is fully considered and a decision reached after full discussion. The conclusion is reported to the council in all cases where the matter was referred to the committee by the council for report, but if the suggestion has originated within the committee or departmental staff, and if the committee disapproves the recommendation, no report is made to the council unless the matter is considered of such importance that the council should be fully advised as to the action of the committee.

Consideration by the Council. Reports of each committee are placed before the council, and it is proper for any member at any time to move that a committee be instructed to follow a specific course or refer the matter back to the committee for further consideration, which means that the action of the committee does not meet with the approval of the council.

In consideration of any report from a committee the rules laid down in the standing orders of the council must be followed. These usually provide in full for the procedure to be adopted, and the right of members to vote thereon. There is no mayoralty veto, although the Lord Mayor may cast a deciding vote in case of a tie, thus having two votes.

Execution of Scheme. If the council approves the recommendations of the committee, several courses are open, the one to be followed being decided by the nature of the proposal.

If no appropriation or additional financial power is needed, the committee is practically free to proceed directly with the execution of the plans.

If it is a matter which may not be executed without an appropriation, the council must of course vote money for this purpose, and all appropriations must pass through the usual form, often including reference to the Finance Committee, investigation and report.

If the scheme involves the borrowing of money without Parliamentary authority, the matter then goes to the Finance Committee, which determines how and when the money shall be raised, but does not consider the advisability or inadvisability of the proposed expenditure.

If a special act has to be secured, a meeting of the ratepayers must be called and their approval secured. If a majority disapproves, no further action may be taken, but if approval is given, the committee is then free to proceed and to have the costs paid out of the city funds. This gives an opportunity for the ratepayers to consider the plan and to accept or reject it.

### C—INCORPORATION OF COMPANIES.

C 1. Date of latest incorporation of company.

London—South Metropolitan, 1842; Newcastle and Gateshead, 1864; Sheffield, 1855.

C 2. Place of incorporation of Company. London, in all cases.

C 3. Was incorporation under general law, special act, administrative order, or other method?

By special act of Parliament, in all cases.

C 4. For what length of time was incorporation to be effective?

As no limit was fixed in any act, it was in perpetuity, or until the company is wound up voluntarily or by act of Parliament.

C 5. If this duration has since been extended or decreased, state when, how, for what period of time, and reasons therefor?

No change has been made in any case.

C 6. Was the power of amendment or alteration of this act reserved to the state?

No power to amend or annul was expressly reserved, but Parliament has the power to do either at any time.

## D—PUBLIC SUPERVISION OF MUNICIPALITIES AND COMPANIES.

### General Powers.

D 1. Does municipality or company have power to condemn private plants under the right of eminent domain?

There is no general "right of eminent domain." Property may not be acquired otherwise than by agreement, except under authority of Parliament, given by private act or provisional order, and when powers of "compulsory purchase" are so conferred, Parliament amply protects vested rights. This applies to cities and companies alike.

D 2. Does municipality or company have power to purchase private plants?

There are no gas plants within the areas of supply of any municipality or company which are not already a part of the undertakings. Neither a municipality nor a company may legally go outside of its authorized area of supply, although it has been done, and it cannot, therefore, legally purchase plants in such unauthorized area. Further, Parliament now refuses to authorize a municipality or a company to supply an area which is already being supplied by an undertaking operating under Parliamentary authority, unless it is guilty of incompetence. If a municipality or a company wishes to supply gas it must buy out or come to some agreement with the undertakers already in the field. If it has powers of supply there seems to be no reason why it could not purchase works already in existence. But the transfer of powers may not be made to any person or corporation without let or hindrance as customarily done in the United States. A company or a municipality may not transfer its powers without express authority and usually only after a special act is secured or approval had from the Board of Trade.

D 3. Does the municipality or company have power to construct works upon its own property?

Land may not be used for gas works either by a municipality or a company unless specific authority has been given for such use, even though the land may have been purchased by agreement. If land were so used, operations could be stopped at once through the ordinary procedure against nuisances; for the manufacture of gas is considered more or less of a nuisance, and may be abated as such unless Parliamentary powers to make gas upon the lands in question have been secured. Before such powers are granted Parliament sees to it that any damage likely to be done is amply paid for and that the site selected is proper for a gas plant. The law is so strict that even an extension to a plant upon additional land. may not be made until an act has been obtained granting the necessary authority. In every instance covered in this report authority to use the lands operated upon has been granted.

D 4. Does the municipality or company have power to lay mains in the streets?

At one time it was believed that the local authorities having jurisdiction over the streets and highways could legally issue permits to lay mains; but it is now generally recognized that there are two necessary and distinct steps. In the first place, an undertaker, whether a company or a municipality, must have authority to supply gas within the area in question. That can be given only by Parliament. In the second place, the local street authorities have the right to say when and how their streets shall be opened and replaced. In other words, the locality has the exclusive right to issue permits.

It should not be inferred that undertakers are operating only where authority from Parliament has been granted. There is a considerable number of instances, the Newcastle Company for example, where companies or individuals are supplying gas in certain areas without Parliamentary powers for those areas, but they go on because no one wishes to take the trouble to bring them to book, because the local authorities are willing to have them there and have issued permits to lay mains, and because no other company or municipality has asked for powers to supply the same area. The undertaking is only there by sufferance, and its position may become, therefore, very precarious. There are also instances where mains have been extended by municipalities into unauthorized areas. Leicester, for example, has very frequently laid mains in outside districts when petitioned to do so by the citizens or local authorities and then gone to Parliament for an act conferring the power to do so.

In this connection it should also be remembered that competition is not tolerated and that as long as a company with Parliamentary powers exercises due care and diligence, and is not guilty of misconduct, Parliament will not authorize a competing plant to be built.

D 5. Does the municipality or company have full powers of operation?

Yes. When the municipalities took over the plants from private companies they took over all the powers previously held by these companies. In the case of Manchester, which was a public plant from the start, Parliament has conferred as full powers as given to any company. Manchester has power to do almost anything, to make stoves, for example. Practically the only power directly and necessarily connected with the making and distribution of gas and the utilization of by-products which has not been clearly conferred is that of making water gas; and many hold that it may be implied from the powers expressly granted. A bill introduced in Parliament a few years ago to authorize the use of water gas was not passed because of the popular prejudice against it. However, water gas plants have actually been installed in four out of the seven systems examined.

D 6. How were these powers conferred?

By general laws, special acts and provisional orders. See lists under *Sources*.

D 7. Explain system of taxation fully, including all payments to central and local authorities, fees, licenses, special assessments, etc.

See special report on this subject at the end of this volume.

D 8. Give statutory provisions regarding purchase of plants by public authorities.

*Birmingham.* The Act of 1875 gave Walsall power to buy the portion of the undertaking owned by Birmingham within its area within one year. The same power was given to other local authorities within whose areas part of the plant acquired was in operation, but they could purchase at any time upon due notice, price to be fixed by arbitration or agreement. Under these provisions, Oldbury, Southwick, Tipton, Walsall and West Bromwich have purchased the plant within their areas.

*Glasgow, Manchester.* No such powers have been conferred upon the outside local authorities.

*Leicester.* Local authorities outside of Leicester may purchase the portion of the undertaking within their areas upon obtaining consent of the Local Government Board, the price to be fixed by agreement, or failing agreement by arbitration. Six months' notice must be given.

*Companies.* The acts do not confer upon any public authority the right of purchase, but of course Parliament may confer this power at any time, subject to such conditions as it may consider wise to impose.

D 9. Give statutory provisions regarding condemnation of private plants by the city under power of eminent domain.

No such general right in English law, as explained under D 1.

**Character of Plant.**

D 10. Give statutory provisions regarding size and location of plant.

The acts always specified the lands which may be used for gas purposes, and no others may be put to this purpose. (See D 3.)

D 11. Give statutory provisions regarding area to be served.

*Birmingham.* The areas which may be supplied were fixed in the acts of the original companies, but certain areas have been taken away by the purchase of plants by local authorities.

*Glasgow.* The area, as defined in the acts, extends outside of the city limits.

*Manchester.* No specific limits are fixed by acts. The city can supply gas anywhere almost, as the law says "Manchester and neighborhood." The present area includes twelve outside authorities. Of course Manchester cannot lay gas mains within the territory of another local authority without its permission. But this

permission may be given without going for a Parliamentary act. Hence, if a local authority had its own gas works, it would not allow Manchester to come in. As a matter of fact Manchester goes around Stockport, which has its own supply.

*Leicester.* The areas are named in the acts and cover over 66 square miles, but see note (2) below.

*London—So. M.* London was "districted" by Act of Parliament in 1860, and a certain definite area was given to each company including the South Metropolitan. Additions were made later by amalgamation with other companies. It now includes nearly all of the County of London south of the Thames.

*Newcastle.* The areas which the company is authorized to supply include two cities and upward of twenty outside areas.

*Sheffield.* The company has powers in the borough and some 98 miles without.

AREAS OF SUPPLY AND POPULATION.[1]

| *Towns.* | *Total Area of Supply* | *Area of Borough* | *Area Without* | *Total Population* | *Population of Borough* | *Population Without* |
|---|---|---|---|---|---|---|
| Birmingham | 120 | 19.75 | 100.25 | 800,000 | 560,000 | 240,000 |
| Glasgow | 98 | 20 | 78 | 1,000,000 | 790,000 | 210,000 |
| Manchester | 47.5 | 21.5 | 26 | 750,000 | 630,000 | 120,000 |
| Leicester[2] | 66.05 | 13.41 | 52.64 | | | |
| | 85.73 | 13.41 | 72.32 | 250,000 | 237,000 | 13,000 |
| London—So.M. | 55 | .... | .... | 1,500,000 | ..... | ..... |
| Newcastle and | 122.2 | 16.3[3] | 105.9 | | | |
| Gateshead | 128.5 | 16.3[3] | 112.2 | 520,000 | 370,000 | 150,000 |
| Sheffield[4] | 135 | 37 | 98 | 470,000 | 445,000 | 25,000 |

PERCENTAGE OF AREA AND POPULATION OUTSIDE OF BOROUGHS.

| *Towns.* | *Area, Per Cent.* | *Population, Per Cent.* |
|---|---|---|
| Birmingham | 83.5 | 30 |
| Glasgow | 79.6 | 21 |
| Manchester | 54.7 | 16 |
| Leicester | 84.4 | 5.2 |
| London—So. M. | .... | .... |
| Newcastle and Gateshead. | 87.3 | 28.8 |
| Sheffield | 72.6 | 5.3 |

[1] The population figures and certain of those for the areas supplied are estimated, but are probably very nearly accurate. The areas are in square miles.

[2] The figures upon the upper line are for the areas of supply authorized by Parliament; those on the lower line, those actually supplied. In other words, Leicester is supplying areas of 19.68 square miles beyond the limits authorized by Parliament.

[3] The Newcastle-upon-Tyne and Gateshead Gas Company supplies the City of Newcastle—all but Walker, about 1.8 square mile supplied by another company—and the Borough of Gateshead upon the south bank of the Tyne. These two towns are practically one urban

D 12. Give statutory provisions regarding nature of plant and equipment.

These are so few and of such a general character that they are not important.

D 13. Give statutory provisions regarding extension of mains.

*Birmingham, Leicester.* Department must supply gas to any owner or occupier within 25 yards of main, owner or occupier to pay for all piping and costs of laying on his own premises and over 30 feet outside. Department may require contract to take supply for two years at such an amount as will annually equal 20 per cent of the cost of laying pipes and providing supply. Security for payment may also be required. As mains are often laid under walks and the streets are narrow, the consumer practically never pays for piping beyond his premises. Contracts are not required and security very seldom. A main is not laid in a street unless there is some prospect of its paying shortly.

*Glasgow.* City must, when requested, furnish gas to anyone within 50 feet of mains upon the condition that the person give security, if required, and that he pay all costs of laying pipes beyond street line. Security is not usually required.

*Manchester.* Anyone who is a ratepayer and lives within 30 yards of a main may demand and obtain a supply of gas. The cost of pipes on private property are borne by the owner. If the new consumer is more than 30 yards from the main, he may be required to guarantee to take enough gas to pay a portion of the expenses, but he cannot compel gas to be supplied unless he is within 30 yards or willing to bear cost of pipes.

*London—So. M.* The company must lay mains to the premises of any owner or occupier who requires it, who is not more than 50 yards from an existing main and who will contract for a two years' supply for an amount which will equal 20 per cent yearly of the cost of the pipes, etc., up to the premises. Security may also be required. The company must light all streets if required, but may not be compelled to place lamps more than 75 yards apart.

*Newcastle.* Same as Birmingham. Company must lay mains wherever requested in Newcastle and Gateshead, but not outside except as they wish.

*Sheffield.* Same as Birmingham. The company must lay mains in any street within its area where local authorities require for public lighting, providing the authorities place lamps not more

center although under separate governments. Like Leicester, this company supplies gas outside of its Parliamentary area, approximately 6.3 square miles in extent, operating under licenses from the local authorities in the various districts. The figures for the Parliamentary area of supply are on the first line.

[1] These figures are for the areas actually supplied; there are some others not supplied for which powers have been granted.

than 60 yards apart on the average. Extensions must be approved by the city, but the company may appeal to general quarter sessions.

D 14. Give statutory provisions regarding improvements and new processes. None, in any instance.

**Price.**

D 15. Give statutory provisions regarding price of service, arrangement of charges, discounts, deposits, etc.

*Birmingham.* Price is limited to 4s. Charges outside the borough shall be the same as those within.

*Glasgow.* Price is limited to 4s. 7d., and must be, as nearly as possible, equal to the cost of production, including manufacture and distribution, interest, sinking fund, depreciation and renewals. Receipts shall be applied to such purposes only. All balances are to be carried over to next year. The revenue shall be credited with the gas consumed for public purposes at the rates charged private persons. Unless otherwise agreed, this rate shall be the same as the lowest price charged to any consumer. Charges in outside areas may be higher than inside the burgh, but may not exceed the limit fixed—4s. 7d.

*Manchester.* None whatever.

*Leicester.* Price limited to 4s. 6d.

*London—So. M.* There is no maximum limit upon price, except as provided by the sliding scale (see D 26). Charges for public lighting shall not be more than the lowest price charged any private consumer. Meter rents are limited to 10 per cent of net cost, and when fittings are supplied with prepayment meters, the charge for both may not exceed 10d. per 1,000 cubic feet of gas used.

*Newcastle.* Price is limited in Newcastle and Gateshead to 3s. 4d., in outside areas to 4s., subject to discounts ranging from 10 to 25 per cent, according to the amount used (see D 15). If the company requires deposits, it must pay 5 per cent interest on every 10s. deposited.

The company must provide and erect public lamps as the cities shall direct; the burners are supplied by the cities. The company must move lamps from one place to another for 15s., and remove entirely for 7s. 6d.; must supply gas for public lamps at the lowest price charged to any consumer after deducting the discount; and must light, extinguish, clean, repair, etc., and the municipalities shall pay actual cost, but cities may do this work themselves if they so desire.

*Sheffield.* Price is limited to 4s., meter rents to amounts ranging from 2s. 8d. per year for a two-light meter to 10 per cent of cost for a meter supplying over 100 lights. All consumers must be charged alike except those in certain outlying districts and those using 100,000 cubic feet per year or more, with whom special contracts may be made. If the company requires deposits, 5 per

cent interest, payable semi-annually, on every deposit of 10s. shall be paid. Street lamps shall not cost more than 35s. 2d. per year per lamp, burning more than 2,200 hours per year, consuming on an average 4 feet of gas per hour, and the price shall not be more per 1,000 feet of gas than the average price for all consumers using over 100,000 feet per annum for the preceding year.

Note.—These are all of the provisions upon the subjects enumerated. Except as above provided, the municipalities and the companies may act unhampered by any statutory requirements.

Service.

D 16. Give statutory provisions regarding character and quality of service.

| *Towns.* | *Pressure.*[1] | *Candle Power.*[2] | *Where Tested.* | *Burner.* | *Purity.* |
|---|---|---|---|---|---|
| Birmingham .... | .6″ & .8″ | 15 | Gas Works | (4) | (8) |
| Glasgow ..... | ditto | 16 | " " | (5) | (8) |
| Manchester ..... | none | none | ..... | ... | none |
| Leicester ..... | .7″ & 1.″ | 14 | Gas Works | (6) | (8) |
| London—So. M. | .6″ & 1.″ | 14 | (3) | (3) | (8) (3) |
| Newcastle ..... | .7″ & 1.″ | 15½ | Gas Works | (6) | (9) |
| Sheffield ..... | none | 16 | " " | (7) | (8) |

(1) Pressure to be such as to balance a column of water not less than ..... of an inch in height from midnight to sunset, and ..... of an inch from sunset to midnight, measured at the junction of service pipe and street main.

(2) Figures are given in the number of sperm candles, six in the pound, burning 120 grains per hour.

(3) The three gas referees appointed by the Board of Trade shall prescribe the time, places and mode of testing gas for candle power, purity and pressure. They shall decide what purity shall be required. They may, upon appeal, decide how gas for public lighting shall be measured. Their salaries are fixed by the Board of Trade, but paid by the company. If gas is of less candle power to an extent of not more than one candle on any one day at a testing place, the average of that day, the day before and the day after shall be taken as the illuminating power on such day. The gas referees shall prescribe the burner and the chimney for testing, but such as will be most suitable for getting the greatest amount of illumination, except an incandescent or similar burner and except that such burner be practicable for use by the consumer.

(4) Sugg's London Argand No. 1, consuming 5 cubic feet per hour.

(5) Union jet burner, consuming 5 cubic feet per hour under a pressure equivalent to .5″ water.

(6) Same as (4), but Act also specifies that the glass chimney shall be 6″ by 1¾″.

(7) Same as (4), but Act also specifies that it shall have 24 holes, each 0.045 of an inch in diameter with a glass chimney 6″ by 1⅞″.

(8) Gas to contain no trace of sulphurated hydrogen.
(9) Twenty grains of sulphur allowed.

D 17. Is there any authority not connected with the municipality or the company which tests the gas and the character of the service?

The Act of 1871, which applies to all plants, except Manchester and the South Metropolitan, provides that two justices may appoint a gas examiner upon petition of not less than five consumers to test illuminating power and purity of gas, and undertakers must give examiners access to testing place. Apparatus to be used is specified and rules are given as to mode of testing.

*Birmingham.* The General Purposes Committee of the Council appoints an independent examiner. At present it is Dr. Poynting, of Mason College—Birmingham University. There is no examiner appointed by the magistrates.

*Glasgow.* Gas is periodically tested and reported upon by an independent analyst appointed by the magistrates.

*Manchester.* No. At one time a professor from one of the Manchester schools was engaged to test, but he was not continued after one year.

*Leicester.* No. The medical officer of health tested for years, but it was given up about ten or twelve years ago.

*London—So. M.* (See note [3] to inquiry D 16 above). The The gas examiners who make the tests are appointed by the London County Council.

*Newcastle.* Local authorities may appoint a competent person to test gas for candle power and purity in testing stations provided and maintained by company at their works. Advantage has been taken of the provision and an examiner appointed.

*Sheffield.* The city may appoint an inspector of meters and a chemist to test the quality of gas whose salary need not be more than 20 guineas, but paid by the company. Under this clause an independent examiner has been appointed.

D 18. Are the results of such examination published?

*Birmingham.* Only occasionally.

*Glasgow.* Yes, in minutes of the council.

*Manchester, Leicester.* None at present.

*Companies.* Yes.

D 19. Give statutory provisions regarding performance of public work by contract or direct employment. None.

D 20. Give statutory provisions regarding letting of public contracts.

*Municipalities.* The Public Health Act, 1875, applicable to all boroughs in England outside of London, provides that every contract made by a local authority shall be in writing and under seal unless it be less than £50 in value, or of daily occurrence or

urgent necessity or something which the town council is habitually required to do by acts of Parliament.[1]

The Public Bodies Corrupt Practices Act, 1889, declares it to be a misdemeanor to give or take bribes to influence contracts; to solicit or receive, or agree to receive, a gift, loan or other consideration as an inducement to use influence with members, officers or servants of a public body; to give, promise or offer to give such a consideration; or to act as intermediary between giver and receiver.

The guilty person is liable to two years imprisonment, with or without hard labor, or to a fine of £500, or to both. He may be made to pay to the public authority the amount or value of the bribe and also declared incapable of election to a public office or of holding any public office, or of voting, for seven years. For a second offence, he may be declared forever incapable of being elected or of holding public office, or of voting. Such cases are comparatively rare, but when they do occur the judges are inclined to deal with them severely.

Very many towns also insert clauses in contracts requiring that the standard rate of wages shall be paid, that the contractor shall not oppose the formation of trade unions, that "trade union" conditions of work shall be adopted, etc. (See Schedule II.) There are no special statutory provisions regarding these matters.

Under the Municipal Corporations Act of 1882, a person is disqualified from being elected or being a borough councillor while he has, directly or indirectly, by himself or his partner, any share or interest in any contract with the council, except contracts for the lease or purchase of land, for public loans, lighting, water supply or fire insurance, or with companies incorporated by Parliament or under the Companies Acts. A member may not vote upon or debate any matter in which he or his partner, directly or indirectly, has any pecuniary interest.

*Companies.* None.

**Securities.**

D 21. Give statutory provisions regarding issuance of stock.

***Municipalities*** do not issue dividend-bearing stock—share capital, as it is called in England.

*London—So. M.* Prior to 1896 the amount of capital stock (share capital) authorized was £2,212,500, which had nearly all been issued, plus "such a sum as will produce with premiums £600,000." The standard rate of dividend on all was 10 per cent and the standard price for the sliding scale 3s. 6d. The Act of 1896 authorized the reduction of the standard rate to 4 per cent and the increase in the stock to 2½ times the former amount, but

[1] Purposes which are not expressly or impliedly authorized are taken to be prohibited. (*See London County Council vs. Attorney General*, A. C. p. 165, 1902). Therefore a contract *ultra vires* is null and void.

this did not apply to the £600,000 item. Capital stock was therefore limited to £6,131,250 including premiums upon the last issue of £600,000. An issue of £750,000 more was authorized by the 1901 Act.

Ordinary stock must be offered at public auction or tender. No lot shall include more than £100 nominal value. The reserve price shall not be less than par value. Stock not sold thus may be taken by stockholders, consumers or employes at the reserve price. Premiums shall be applied to capital purposes. The company may, with the approval of the Board of Trade, offer stock before public auction or tender to consumers and employes at the average market price of the stock in the month immediately preceding.

*Newcastle.* Up to December 31, 1905, the company had been authorized from time to time, by act of Parliament, to issue £2,857,571 in share capital. In 1901 an increase of £777,571 was authorized as a stock bonus, for which no cash was received. At the same time the maximum rate of dividend which could be paid was cut from 7 per cent to 3½ per cent.

All ordinary stock must now be sold at auction in lots of not greater value than £100. All stock not sold in this manner may be offered to the stockholders at a reserve price fixed in advance of the sale, but this reserve bid must not be less than par. All premiums received shall be spent upon works, but shall not bear dividends. Up to January 1, 1905, £1,730,000 in stock had been authorized subject to these "auction clauses," in which £648,488 had beeen issued. The company still had power, January 1, 1906, to issue £627,755 in stock.

*Sheffield.* Under successive acts the company has been authorized to issue £868,482 of share capital, and all is now outstanding. None of it was subject to the "auction clauses." A considerable portion was first issued in the form of mortgages at the usual rate of interest and later converted into share capital bearing a maximum dividend of 10 per cent.

D 22. Give statutory provisions regarding issuance of bonds (loan capital). See also D 25.

*Birmingham.* The Act of 1875 limited borrowing to £2,000,000 and authorized the city to mortgage the undertaking, borough fund or rate, or all as security. Any annuities issued were to be deducted from this amount, capitalized on a basis of twenty years purchase. But no limit to the amount was fixed if the Local Government Board gave its consent, and its approval was necessary for all over £2,000,000. The Act also provided that the city might issue "debenture stock" in lieu of mortgages and reborrow for the unexpired period any sum paid off by sinking fund.

*Glasgow.* Parliament has authorized the issue of mortgages upon the works and income thereof up to £3,200.000. If any are paid off other than by a sinking fund, the amount may be reborrowed for the unexpired period.

The issue of annuities amounting to £34,762 annually was authorized in 1869, the security for which is the plant, its income and a tax rate up to 6d. in the pound.

*Manchester.* Authority has been granted by statute or Local Government Board order to issue about £2,400,000 of loan debt. Part of this was to be secured by the gas works and the rents and profits thereof, especially during the early history of the undertaking. In recent years loans have been made on the security of the borough rates—the taxing power of the city—as well.

Approval of the Local Government Board must be obtained before loans are made. A local inquiry is held by an inspector which any ratepayer may attend and at which he may raise objection. If the Local Government Board considers the proposition wise and reasonable, it approves.

*Leicester.* All loans and interest are a charge upon the revenues and property of the whole city. Consolidated stock is now issued in the place of special gas stock as formerly. Authority to borrow £1,576,651 has been given.

*London—So. M.* Debenture stock has been limited ordinarily to one-third of the ordinary stock. "Auction clauses" apply. The Act of 1896 authorized the conversion of the debenture stock from 5 per cent to a lower rate—not specified, but to be less than 5 and not less than 3. The conversion was to involve such an increase in the amount as would make the interest upon the new amount at the new rate equal to that formerly paid upon a smaller amount but at the higher rate. The rate actually fixed was 3 per cent.

*Newcastle.* Authority to issue mortgages was given in various acts up to 1896, amounting in all to £175,000. Since then these have all been converted into debenture stock, and other issues authorized, totaling £525,326 at present. It is customary to limit the amount of debenture stock to one-third the ordinary or preference capital raised. The rate of interest is limited to 4 per cent.

*Sheffield.* Mortgages were issued until within recent years, but all authorized—£173,500—have been converted into ordinary stock. The company has power to issue £200,000 in debenture stock to be sold under the "auction clauses." Interest is limited to 4 per cent.

Note.—The method provided for the collection of interest and principal of mortgages and debenture stock is through the appointment of a receiver or "judicial factor," subject to the ordinary judicial procedure, which would doubtless apply as well to municipalities as to companies, although there has been no such case in the towns visited.

**Financial Matters.**

D 23. Give statutory provisions regarding use of income or any portion thereof.

*Birmingham.* Separate accounts for undertaking shall be kept, and receipts shall be used to pay charges in the following

order:—(1) Costs, charges and expenses of obtaining this act and expenses of transfer; (2) ditto of issuing annuities, mortgages and debenture stock; (3) manufacturing and operating charges; (4) Staffordshire gas annuities and interest on debenture stock; (5) mortgages and interest on debenture stock of city issued under this Act; (6) sinking fund charges; (7) all other expenses; (8) reserve fund not to exceed £100,000, to be used to meet deficiencies and extraordinary claims; (9) rest to go to borough fund or rate.

*Glasgow.* Income was to be used for (Act of 1869):—(1) expenses of securing rents, charges and borrowing of money; (2) expenses of management and maintaining plant; (3) annuities and interest on money borrowed; (4) execution of powers, including extension and improvement of mains and works; (5) balance to go to the city for general purposes. The last clause was repealed in 1876 and now no profit may be used "in aid of rates." (See inquiry D 15.)

*Manchester.* Receipts shall be used to pay:—(1) all costs, charges and expenses of keeping up and carrying on the works and of making good all damage and injury due to laying of mains and pipes; (2) interest on money borrowed and mortgages; (3) sinking fund payments as required by law; (4) such other charges as the council may fix for the improvement of the city.

*Leicester.* Revenue is to be used in the following order:—(1) costs, charges and expenses of collecting revenue; (2) working and maintenance charges; (3) interest on mortgage debt at time of purchase; (4) interest on debenture stock issued for purchase; (5) interest on subsequent loans; (6) sinking fund payments; (7) reserve fund as seems fit, but fund shall not, with accumulations, exceed £50,000; it shall be used to meet any deficiency in revenue and extraordinary claims, damages and accidents; (8) balance to credit of district rate. According to the Act of 1884, there is no limit to the amount that may be set aside for sinking fund.

*Companies.* See data under inquiry D 26.

D 24. Give statutory provisions regarding depreciation.

None in any case, but see answer to inquiries D 23 and 25.

D 25. Give statutory provisions regarding sinking funds.

*Municipalities.* All loans made under the Local Loans Act, 1875, must be repaid, within the time specified (a) by annuity certificates for the period, (b) by the payment of a certain number of debentures every year—equal annual installments, (c) by the annual appropriation of a fixed sum, or (d) by a sinking fund. Where the last method is in operation, such yearly or half-yearly sums shall be set aside and accumulated at compound interest as will be sufficient to pay off within the prescribed period the whole of the loan. The funds shall be invested under the direction of the Local Government Board in such securities as trustees may invest in or securities issued under this Act. If any part is invested in the securities of the local authority or is applied to pay-

ing off any part of the loan before it is due, the interest thereon shall be paid into the fund. The local authority must make a return to the Local Government Board within twenty-one days from the end of the year showing the amount invested, the amount applied, the character of the investments, etc. If it appears that the local authority has not complied with the law, the Board may direct that the amount in default be raised, invested or applied, as the case may be.

The Secretary of Scotland has similar powers in Scotland.

The above provisions are not in force in all towns nor applicable to all loans. The following special provisions should be substituted wherever the latter differ:

*Birmingham.* The Act of 1875 provided that after five years the city shall provide a fund out of revenue of plant, or borough fund or rate to pay off Staffordshire gas annuities by installments or sinking fund within 85 years; to pay off all money borrowed during 5 years from date, within 80 years after the 5 years from date, and all money borrowed later, within 80 years from the date of borrowing. The exact amounts to be set aside may be prescribed by the Local Government Board—it may fix the period of repayment on later loans.

The town treasurer is required, within 21 days after the date when any sum must be set aside, to make a sworn return to the Local Government Board stating what sums have actually been set aside during the previous year, describing the securities in which investments have been made, the amounts paid off, the total amount invested, etc. If the city has not lived up to the statutory requirements, the Local Government Board thus becomes aware of the fact and may order double the sum set aside for which the town is in default.

*Glasgow.* Prior to 1901 there was no statutory requirement for a sinking fund to pay off the annuities, but an act of that year directed that after 1905 a payment should be made annually of 1½ per cent on £1,000,000—the estimated capitalized value of the annuities. As the annuities are redeemed, the amount set aside may be reduced accordingly. The sinking fund payments required on the loans are as follows:—For £1,000,000 authorized in 1869, not less than 1 per cent; £1,000,000 in 1898, not less than 1 per cent; £700,000 in 1901, not less than 2½ per cent; £500,000 in 1905, not less than 3 per cent.

*Manchester.* Until about 1875 the acts authorizing loans generally provided that 5 per cent of all loans outstanding should be set aside annually to pay off these loans. Then for many years the customary clause required an annual sinking fund payment of 1½ per cent for the first twenty years and 2 per cent thereafter upon the total amount borrowed. But at present, and this has been the law for many years, the Local Government Board fixes the period within which the loan must be repaid. The usual time is 30 years, but 5-year and 50-year periods have been approved.

The same provision is in force here as in Birmingham regarding complete returns to the Local Government Board of the status and operations of the sinking fund.

*Leicester.* The periods within which the loans must be repaid are as follows:—Loan of £476,651 authorized in 1878, 60 years; £250,000 in 1878, 55 years; £100,000 in 1891, 30 years; £250,000 in 1897, 30 years; £500,000 in 1902, 40 years. Any sums paid off before the expiration of these periods may be reborrowed for the unexpired portion.

Payments must be made to the sinking fund out of revenue in such amounts that the total, including accumulations at compound interest, will cancel the debt within the periods just named. Repayment may be made by equal annual payments to the holders of principal or principal and interest. The town may equate periods so as to substitute one period for the several, but the Local Government Board must approve before being put into force.

A similar provision is in force here to that in Birmingham regarding returns to the Local Government Board, etc. Also, if it appears to the Local Government Board that the sums annually set aside are not sufficient to repay loans when due, the amounts set aside shall be increased as the Local Government Board may determine. Sinking funds must be invested in standard securities or loaned to other departments which have authority to borrow money, but a strict accounting must be kept, and all items must be properly booked as prescribed by the acts.

*Companies.* No requirements in any instance.

D 26. Give statutory provisions regarding profits and dividends.

*Municipalities.* There is no limit to the profit that may be made, except in Glasgow where profits may not be used for any other purpose than the gas undertaking. (See inquiries D 15 and 23.)

*London—So. M.* The sliding scale has been in force since 1876. The standard price is fixed at 3s. 1d. for 14 c. p. gas. But if, during the whole of any half year, the price charged shall have been 1d. or a part of 1d. above such price, the dividend payable for that half year shall be reduced below the standard rate—4 per cent—by one-fifteenth of 1 per cent for every 1d. or part of 1d. above the standard price. If the price shall have been 1d. or more below, the dividend may be increased one-fifteenth of 1 per cent above 4 per cent for every full 1d. below.

If the profits exceed the amount which may be divided according to the sliding scale, the excess, up to 1 per cent per annum on the paid-up capital, may be carried to a fund to be invested in securities until it accumulates with interest to 5 per cent of the paid-up capital and to be used as an insurance fund to meet extraordinary claims from accidents, strikes, etc., which in the opinion of the auditor, due care and management might not have prevented. All excess profits beyond this amount shall be carried to the credit of the divisible profits for next year.

The company may create a reserve fund out of the divisible profits due to a reduction in the price of gas below the standard rate by setting aside such sums as it deems fit to be invested in securities and to be used to make up back dividends when below the standard rate.

*Newcastle.* This company is also operating under the sliding scale. The standard price is 2s. 9d. and the standard rate 3½ per cent. The equivalents are ⅛ of 1 per cent in dividends for every 1d. in price. Profits over prescribed rate of dividend may be used to form a fund to make up future deficiencies in dividends or extraordinary claims, but this fund with accumulations may not exceed 8 per cent of the nominal capital before the conversion authorized in 1901. Apparently, although not expressly stated, any profits over and above what may be divided as dividends or placed in reserve fund should be carried over as a balance to the next year when a reduction in the price would allow a still larger dividend to be declared and the balance then distributed to the shareholders.

*Sheffield.* The maximum dividend is 7 per cent on the amount paid in as long as the price of gas exceeds 3s. 3d. per M.; 7½ per cent when it exceeds 3s., but not 3s. 3d.; 9 per cent when it exceeds 2s. 9d., but not 3s.; 10 per cent when it is at or under 2s. 9d. The 10 per cent limit may never be exceeded, no matter how low the price goes, and income tax is to be paid out of it.

Excess profits—over the divisible rate—may be put into a reserve fund, until it reaches with accumulations 10 per cent of capital. The Act does not say what is to be done when the reserve fund is full and there is still a surplus over the divisible 10 per cent. Apparently, it is to be carried forward as a balance until continued reductions in price leave no surplus to be so utilized.

D 27. Give statutory provisions regarding compensation for franchises.

*Municipalities.* Inquiry is not applicable.

*Companies.* In a way all of the restrictions and limitations under which the companies are operating are in compensation for the franchises they hold, but the inquiry has reference rather to the direct payments or equivalents in service rendered to the local authorities.

*London—So. M., Sheffield.* None.

*Newcastle.* None, unless the clause requiring the company to provide lampposts for public lighting might be so considered. (See answer to inquiry D 15.)

D 28. Give statutory provisions regarding audit of accounts.

*Birmingham, Manchester, Leicester.* The accounts of English boroughs must be submitted to three auditors. Two are elected annually by the ratepayers, and the third is appointed by the mayor. The elective auditors may charge two guineas per day for their services under the Public Health Act. The mayor's auditor is un-

paid. The elective auditors must be qualified to be members of the town council, but must not be members or officials of the council. The mayor's auditor must be a councillor. They have no power to charge an officer with an item illegally expended and order that he pay it. They can only report what they find and appeal to the public or the city officials to take action. Most of the large boroughs also appoint trained accountants as auditors, although not required to do so by law. The form of accounts is prescribed by statute, which also fixes the time when accounts shall be made up.

*Glasgow.* The English law does not apply to Glasgow, but statutes require that the city shall appoint auditors annually who shall not be officeholders, but skilled in accounts, and also fix their compensation.

*London—So. M.* The auditor is appointed by the Board of Trade. He prescribes the form of accounts, audits them, authorizes the payment of dividends, and without his authorization none may be paid. All facilities must be given him. The company or the London County Council may appeal from his decision to an arbitrator. The auditor may require the company to correct anything he thinks wrong. His salary is paid by the company but fixed by the Board of Trade. Auditors are also appointed by the shareholders.

*Newcastle.* The auditor must be a chartered accountant and is named by the company and approved by the mayor, aldermen and burgesses of Newcastle and Gateshead. He does not have such important powers as in London. The Act says nothing further about him. He makes a short report to the directors.

The Act of 1847 provides that on petition of two ratepayers who use gas, certain local officials are to appoint a competent person to examine the actual state of the undertaking, and if it appear that profits have exceeded the limits, price must be reduced. But this has been of no practical use.

*Sheffield.* The city appoints auditor, not a shareholder, annually, who has full powers of examination and report. His salary is fixed by the city but may not exceed 20 guineas for each half-yearly audit. Accounts must be made up annually and sent to the local authorities. The Act of 1847 is also applicable here.

D 29. Give statutory provisions regarding publicity of reports and records.

Reports must be made to the Board of Trade by all undertakings, and the statutes fix the form of such reports and date of making them. Companies are required in addition to send a copy of their report to the local authorities and to give one to any applicant at a price not to exceed 1s.

D 30. Give statutory provisions regarding claims for injuries or death. None.

**Labor Conditions.**

D 31. Give statutory provisions regarding salaries paid.

*Municipalities.* None.

*London—So. M.* Salaries of directors shall not exceed £5,000 in all, until quantity of gas made exceeds 12,500,000,000 cubic feet, nor £5,500 until it exceeds 15,000,000,000 cubic feet, when they may be increased to £6,000, but not more.

*Newcastle.* None.

*Sheffield.* Nominee directors (see inquiry D 39)—those appointed by the city—may not receive a salary and none may be managing director. The salaries of the other directors, except the managing director, may be £2,000 *in toto* when price is less than 3s. 6d. per 1,000 cubic feet; the managing director may receive a special compensation.

D 32. Give statutory provisions regarding wages to day laborers. None.

D 33. Give statutory provisions regarding hours of labor of day laborers. None.

D 34. Give statutory provision regarding employer's liability.

There are no special statutory provisions beyond those in the general acts which apply to municipalities and companies alike. A brief summary is as follows:

Compensation to a workman for injuries, or compensation to his dependents or other legal personal representatives on account of his death, is recoverable at present and until January, 1907:—

I. At common law;

II. Under the Employer's Liability Act, 1880;

III. Under the Workmen's Compensation Acts of 1897 and 1900.

I. At common law the workman must prove that he was in no way to blame for the accident, that the employer was aware of the incompetence of any other servant upon whom the blame falls, and that the employer was aware, and the workman himself not aware, of the defect or danger of the machinery or plant causing the accident. Compensation has consequently very seldom been secured by workmen at common law.

II. The Employer's Liability Act, 1880, applies to manual laborers only. Compensation may be claimed for accidents due (a) to defects in the works, plant or ways; (b) to negligence of, or orders given by, persons in authority; (c) to negligence of persons entrusted with responsible work, such as engine-men, points-men and signalmen. But the claim fails if the workman was guilty of contributory negligence or if he knew that certain defects existed and he did not report them, or if the orders made and obeyed were in accordance with by-laws or rules sanctioned by law or by a Secretary of State. The amount of compensation is fixed by a judge or jury, but may not exceed three years' earnings of that class of workmen.

Notice of the accident must be given to the employer within six weeks, and action must be entered in case of injury within six months, or in case of death within twelve months. The case comes before a county court (or the equivalent courts in Scotland and Ireland).

A defect in this Act is that the action falls to the ground if the employer dies or becomes bankrupt before the decision is given or payment made.

If a workman should proceed at common law or under the Act of 1880 and should lose his case, the court may, if it decides that he has a good claim under the Acts of 1897 and 1900, proceed to fix his compensation under those Acts; but it will deduct from his compensation the extra costs of his employer in defending the original claim.

III. The Workmen's Compensation Act, 1897, forbids contracting out of its provisions, except by a scheme which the Registrar of Friendly Societies shall have approved as being equitable, after consulting employer and workmen. But no such scheme may be made a condition of employment, and the workmen may apply to have the scheme revoked if they have good cause for complaint as to its results.

If an employer from whom compensation is due becomes bankrupt or makes an arrangement with his creditors, or if the employer is a company and begins proceedings to dissolve organization, the workman has a claim on any funds due from insurance under the Act. If the amount payable by the insurers is less than the amount awarded, the difference may be claimed from the estate. If an employer dies, the compensation may be recovered from his executors.

The Act does not define the word "workman," and it has therefore been held to cover all persons, even clerks, employed at weekly wages in certain places. The places specified are railways, factories, mines, quarries not less than 20 feet deep, engineering works, and buildings exceeding 30 feet in height in process of erection, repair or demolition. The scope of the Act in this respect can only be settled by reference to the Railway Acts, Mines' Acts, Factories' Acts and so on. For instance, "factories" legally include docks, wharves and quays, as well as laundries, and most other places where power machinery is used.

Considerable litigation and many conflicting decisions have arisen over the places to be included. The Bill before Parliament, which will not become law until January 1, 1907, removes the principal causes of litigation. No minimum height is specified for buildings, the phrase "on or in or about" is not used, and no trades or places are specified, the Bill covering any employments and any places which are not specifically excluded.

Under the existing law a claim can only be made if the workman is killed or prevented from earning full wages for two weeks, and if the accident, even though caused by himself, is not due to his own "serious and wilful misconduct," and if he is doing his proper

and usual work or anything he is called upon to do. A workman having left his proper work in order to save his employer's property failed to obtain compensation for injuries thereby received.

Notice must be given as soon as possible after the accident, by hand or registered letter, and action entered within six months; or in the case of death, within six months after death.

For an accident resulting in complete incapacity to work the compensation is half the man's average earnings, but in no case more than one pound per week. For partial incapacity any amount that he is able to earn will be taken into account. The workman must submit to examination, from time to time, by a duly-qualified practitioner engaged by the employer, or to one of those appointed for this purpose by the Secretary of State.

Either employer or workman may apply to have the weekly payment reviewed by the court. After six months of weekly payments the employer may compound for a lump sum. Any disputes over these and similar points are to be settled by arbitration.

The compensation payable to relatives of a workman killed varies with the extent of their dependence upon him. If wholly dependent upon him, a wife, husband or other near relative within the legal limit receives 156 times his average weekly earnings, but in no case less than £150 or more than £300; where the support was only partial the amount may be as low as the judge or arbiters think sufficient. If no legal dependants are left, the sum must be for reasonable expenses of burial up to £10.

D 35. Give statutory provisions regarding pensions to employes.

*Birmingham.* The Birmingham Corporation (Consolidation) Act, 1883, authorized the creation of a superannuation scheme and the making of grants to friendly societies including the employes of the city. Prior to 1897 the only scheme constituted was for the gas employes, but a much more comprehensive plan has since been adopted under Provisional Orders of 1897 and 1902.

Part I is:—(a) Compulsory on all receiving forty shillings weekly or upward, who entered the service after date of scheme (December, 1897); (b) compulsory on all receiving forty shillings or upward, already in the service, unless objection was filed within three months; (c) open to all receiving less than forty shillings weekly, provided those already in service gave notice of their desire within three months, and those engaged since have given notice within three months from entering service; otherwise past service will not be counted should they enter the scheme subsequently.

Part II applies to all receiving less than forty shillings, who have not desired to be included under Part I. Policemen, members of the fire brigade, employes of the lunatic asylums committee and all under 21 years of age are excluded.

In the case of undertakings acquired by or transferred to the city, past service with such undertakings will count as past service with the city.

Under Part I claim to superannuation may be made:—(a) on becoming incapacitated after 20 years of service; (b) on reaching the age of 65 years, after 20 years of service; (c) on 40 years aggregate service. With the exception of the town clerk and other statutory officers, all servants after 20 years of service shall retire on reaching 65 years of age, unless excepted by special resolution.

The premiums for allowances and contributions are as follows:—

(1) For 20 years of service, 20/60ths of average wage, calculated on 5 years preceding; for each succeeding year up to the maximum, 1/60th of average wage.

(2) The maximum shall be:—(a) Where average wage is £500 or less, 40 years, entitling to 40/60ths; (b) where average wage is more than £500, 30 years, entitling either to 30/60ths of the average or to 40/60ths of £500, whichever is the greater sum; but additional allowances may be made in special circumstances by adding a number of years service, not exceeding ten, to the years actually served.

(3) Three per cent of wages is deducted for contributions, but all contributions to the fund cease after 30 annual payments where salary exceeds £500, or 40 annual payments in all other cases.

(4) Fraud, dishonesty or misconduct involving pecuniary loss to the city debars any claim to benefits. Retirement through no misconduct, but before becoming entitled to benefits, entitles a servant to receive back the sum of all contributions paid. But if he be re-engaged, past service will only count on restoration of such sum.

(5) Legal representatives of a servant who dies before becoming entitled will receive the sum of contribution paid.

Under Part II a servant receiving less than forty shillings weekly and not having entered the scheme, becomes entitled to a pension after 20 years of continuous service, provided he is not less than 55 years of age and provided he is duly certified as permanently incapacitated. The scale is as follows:—After 20 years of service, 7s. per week; after 30 years of service, 8s. 6d. per week; after 40 years of service, 10s. per week.

Under Part III—an "Optional Allowance Scheme," 1902—a committee may recommend the city to make an allowance in cases not covered by Parts I and II.

*Glasgow.* The Act of 1869 provided that the city may pay any employe who has been employed by it 15 years or more and has retired such annual sum as they may think reasonable for any term they wish.

A more recent Act, that of 1902, also provides that the city may (a) contribute out of the city funds to any friendly society, superannuation, sickness or burial fund established for their employes' benefit, and (b) exercise certain control in regard to the payments to and from such funds. The city does make such pay-

ments, but the question of a complete scheme is yet under discussion; it has not been enacted into law.

*Manchester.* The Manchester Corporation Act, 1891 (sections 5 to 12) and the Manchester Corporation Act, 1901 (section 43), gave the city power to establish a thrift fund for the benefit of the employes of the Corporation, or, in the event of death, their representatives. On August 3, 1892, resolutions were passed by the city establishing the fund, to which the city contributes half-yearly a sum equal to one-third of the contributions of the members.

All employes except firemen, policemen and those temporarily employed, *may* become members (firemen and policemen have a separate fund), but all who have entered the service since 1891—the date of the principal Act—and who are getting 30s. per week or upward, *must* become members, and are obliged to contribute to the fund.

Each contributor is to pay a sum equal to 3¾ per cent of his wages, which is deducted from wages before being paid. The city adds, therefore, a sum equal to 1¼ per cent of his wages. The whole accumulates at the rate of 4 per cent per annum.

No provision is made for superannuation. But the benefit is received in the shape of the withdrawal of the entire amount to which a member is entitled, because of:—(a) reaching 65 years of age, (b) being incapacitated by infirmity, (c) retiring *bona fide* and not to escape dismissal, (d) being required to retire for good reasons.

In cases of (a) and (b), he is entitled to the whole amount paid by himself, together with the amount contributed by the city and interest on both. In cases (c) and (d), he is entitled only to his own contributions and interest thereon. In the case of death, his representatives receive whatever amount he would have been entitled to claim. Fraud, dishonesty or misconduct causing pecuniary loss works forfeiture of all claims on the fund except such allowance as may be made voluntarily.

A committee of five contributors is to be elected by the contributors, and has the power to examine and audit accounts and to give advice. Other clauses provide for advances to members in case of long illness. The fund is held absolutely by the city until benefits are due, and cannot be alienated or assigned by members. Accounts are made up half-yearly, and each member must be furnished once a year with a copy of his own account. No contributor may withdraw from the scheme so long as he remains in the service of the city.

*Leicester.* No statutory provisions.

*Companies.* No statutory requirements in any instance.

D 36. Give statutory provisions regarding strikes.

The Conspiracy and Protection of Property Act, 1875, applies to municipalities and companies alike. The principal section, —4—enacts that when an employe "wilfully and maliciously

breaks a contract of service" with a municipality or company, "knowing or having reasonable cause to believe that the probable consequences of his so doing" will be to deprive the people of gas, wholly or to a great extent, he shall be liable to pay a fine of not more than £20 or be imprisoned not more than three months. A similar penalty is imposed by Section 7 upon every person that, in order to compel another to do certain things, (1) uses violence or intimidation against that person or wife or children, or injures his property; (2) persistently follows him about; (3) steals his tools, etc. (commonly called "rattening"); (4) watches or besets his house or workshop or other place; or (5) follows him with others in a disorderly way.

D 37. Give statutory provisions regarding citizenship of employes. None.

D 38. Give statutory provisions regarding conditions under which employes labor.

None, except the general provisions in such acts as the Factories and Workshops Acts, which apply equally to municipalities and companies.

D 39. Give statutory provisions regarding other important matters.

*Birmingham.* Expenses of public lighting must be charged to rates—taxes.

*London—So. M.* The company may adopt a scheme for allowing employes holding stock to elect not more than three directors who also hold stock, when the total amount of stock so held shall exceed £40,000. The scheme must first be approved by the Board of Trade. Employes to be directors must hold not less than £100 of stock.

The company may sell gas in bulk to any distributing company in an adjoining area.

*Sheffield.* The number of directors is fixed at twelve, 3 of whom may be appointed by the city, who shall be members of the city council and *not* shareholders. These 3 retire every year, but are re-eligible and have the same powers as the others. A quorum is 5 directors, but the 3 city directors do not count in making it; therefore they can never be in the majority.

On the question of the practical working of this provision, it is to be noted that the company directors can easily sit in camera and are not obliged to take the city directors into their confidence on all points. The city directors report only to the council and to the public, and can never dominate unless there should be such an unusual thing as a division in the board when they would hold the balance of power.

**Remedies.**

D 40. What means have been provided for the enforcement of the above provisions?

D 41. Are they adequate? D 42. Give defects.

I. The various remedies for enforcing statutory regulations may be grouped into four classes, viz., judicial, legislative, administrative and "extra-legal." The first class includes the well-known remedies applied through the courts, such as the issue of the common law writs, the imposition of fines after trial, the appointment of a receiver, etc. For instance:—If an undertaking refuses to supply gas to any individual, the person aggrieved may bring the responsible persons before a court and have the question settled whether he is entitled to a supply. If the decision is in his favor an order will be issued directing that gas be furnished, to be followed by the ordinary procedure in case of continued refusal. If mains are being laid without authority, which is held to be a nuisance, the remedy is the same as for any other nuisance. If the prescribed routine for official action has not been followed, the courts will declare the action invalid and set it aside when suit is brought.

It is not necessary to summarize or even to indicate broadly what is the law. The principal fact to be noted is that the ordinary rules apply, and that no statutory restrictions or limitations of importance have been enacted. Further, generally speaking, these rules apply alike to municipalities and to companies. Indeed, the municipal corporation in England seems to be considered, in law and in common thought, very much as if it were a private corporation, pure and simple. Of course, when it comes to fining a public body, the rule breaks down, for it would mean merely taking from one pocket to put in another, unless it is provided, as in the Glasgow acts regarding candle power. that the fines shall go to those who begin the proceedings. But in theory and so far as practicable, the judicial remedies will lie against municipality or company.

There are two weaknesses to this form of control. One is that the fines are often too small to prevent a corporation from breaking the law. What effect is there to a fine of £10 a day for default as to candle power in a city like Sheffield, where there is such a law, if the company really wishes to break it? Unless the amount to be saved by disobedience is equalled or exceeded by the fine for disobedience, it would be financially profitable to disobey, and when such is the case a mere fine is not effective.

In the second place, as the purpose of judicial control is the protection of private rights and depends upon the initiative of some individual, the law may go without enforcement. Litigation, especially against a big public service corporation, is expensive and very tedious. The individual injury may be small, and not worth a suit. The violation, therefore, continues, because no one will go to the trouble, and combination for purposes of litigation is extremely difficult. Further, the rule regarding a proper remedy when a company exceeds its powers is that no action can be maintained by any individual unless he sustains particular injury, the theory being that only the public as a unit is entitled to complain. If the consent of the attorney general is secured, pro-

ceedings may be brought "ex rel." Municipalities are individuals for this purpose. The courts have also held that only a shareholder or the attorney general may bring suit to question whether reserve and insurance funds are too large. In other ways even the consumer has been cut off from a remedy through the courts.

II. The second class of remedies—administrative—is much more limited in its scope and less frequently provided. Municipalities are supervised by the Local Government Board (Secretary for State in Scotland), a department of the central government with headquarters in London. It has jurisdiction over loans and sinking funds in certain instances (see inquiries D 22, 25 and 44), and its control is quite effective as far as it goes. When authority to make a loan is requested, the Board may refuse until its wishes are met not only as to this loan but as to any past financial delinquency. As all plants are steadily growing, new capital must be raised from time to time, and then the Board has its innings.

The principal weakness of this control as a remedy for illegal acts is that the day of reckoning is so often postponed. If a large capital increase is authorized at one time, it may be many years before the town is again before the Board and an opportunity given to remedy the infraction. Further, the means at the command of the Board for ascertaining whether the statutes are being obeyed are limited. Its inspection, when the approval of a new loan is being considered, may be as thorough as desired, but between inspections, the Board has no means of knowing what is being done, except from the public reports which must be issued. Again, the Board does not attempt to include everything within its survey; it confines its activities to financial matters and particularly to ascertaining whether the previous loan was made as directed and whether the provisions then imposed have been obeyed. Any delinquency in candle power, for example, would doubtless not be considered by the Local Government Board as coming within its province, although there is nothing in the law to prevent it from considering it.

The powers of the Local Government Board as to sinking funds (see inquiry D 25) are complete in every way. The means of ascertaining whether the law is being obeyed are adequate, the duty of enforcement is plainly stated and logically placed, and the remedies ample and effective. Instances are cited (not in towns visited in connection with this report) where a department has been called to account because the sinking fund was a few shillings below what it should have been.

There is practically no *local* administrative control over municipal undertakings. The council is the ultimate source of authority, and although an appeal may be taken from the action of a subordinate to a higher official and finally to the town council, there is no established, legalized method of procedure. It is all more or less informal, and any change in the policy of the council must be brought about by persuasion or the election of new

members. Even in the case of local audit, the decision of the auditors has no legal or binding force.

The private companies are subject to different administrative remedies entirely. They relate principally to the audit of accounts and the testing of gas (see inquiries D 16, 17 and 28). The plan of having an independent person to test gas is a good one, but it provides no remedy; it is merely a good way to find out whether the gas is up to the legal standard. If it is not, the gas examiner can do nothing; recourse must still be had to a judicial remedy.

The system of audit prescribed by the acts of the South Metropolitan Gas Company (see inquiry D 28) is fairly effective, for it does not end with a report upon the accounts, leaving one to find another way to remedy an illegal act, but provides its own remedy. No dividends may be paid without authorization of the auditor, and he may withhold his signature until any error he finds has been corrected. But an audit such as has been provided for the Newcastle company (see D 28) is worthless as a remedy against illegal acts, it does not go far enough. Indeed, that is the principal criticism against the administrative remedies. They err not in what they provide, but in what they fail to provide; and as far as the companies are concerned, they are practically free from interference in this direction. One instance may be cited. The Sheffield acts provide that dividends shall be limited to 10 per cent, but that a reserve fund may be accumulated equal to 10 per cent. As a matter of fact, the reserve fund and the dividends are at the limit, but the profits have been so large that a balance was carried forward last year—the total of the surplus profits for several years—almost equivalent to another 10 per cent of the capital stock. The acts confer no authority for keeping such a large balance, and the purport of the acts is clear, viz., that prices should be reduced so that there should be no such balance. But no simple and quick method of correcting the situation has been provided.

III. Coming to the third class—legislative remedies—one finds a situation quite different from that in the United States. We are accustomed to a legislature hedged round about with constitutional restrictions, which may not be overridden under any circumstances. It is somewhat difficult, therefore, to realize that Parliament is legally absolutely unfettered and able at any time to step in and declare what shall be or shall not be the law of the land. If there is any grievance so monstrous as to attract its attention, and so difficult of alleviation that other remedies are inadequate, Parliament will take action. But there are several important considerations to be noted regarding this legislative remedy.

In the first place, Parliament does not sit in judgment and meet out punishment, except that the House of Lords is the court of final resort. Parliament will correct any flaws in procedure and make the law plain if it has been wrongly interpreted or interpreted in an unexpected way, but it will not apply the law

in a given case. One must have recourse to the courts for this purpose.

In the second place, the very bigness of the remedy and the slowness with which Parliament moves unfit it for many cases. A small error or a wrong which may be righted in another way is not usually recognized by Parliament. That body holds that its purpose is to give expression to public opinion upon important matters; and a corollary of this theorem is that progress should be made slowly, so that public opinion may have time to crystallize. This means that Parliamentary action comes haltingly, that it is behind rather than in advance of the needs of the country.

Thirdly, legislation is generally *non ex post facto*. It will remedy, theoretically, the evil in the future, but it is not ordinarily retroactive. There is one way, however, in which it does take into account past deeds. If a municipality or a company has abused its powers and comes to Parliament for additional authority, that body will take cognizance of its past record and may refuse to grant its request or only upon such conditions as will prevent abuse in the future. Parliament has gone so far in certain cases as to authorize the taking over of a company by a municipality upon rather severe terms, or what were considered hard terms, because the company had not given as good service and had not been as considerate of public welfare as it should have been. However, Parliament is ordinarily so careful of property rights and so conservative in its attitude that legislative remedies are not drastic.

The local parliaments—the town councils—are more easily reached, more quickly affected and more likely to act. In the case of municipal plants, their control is supreme, and through the selection of members, it is always possible to bring about any change or an entire reorganization. With company plants this remedy is not important, for the municipal powers of supervision are not important (see inquiry D 46), and as Parliament confers powers upon companies, about the only thing a town may do is to oppose the company when it is before Parliament; but this opposition is by no means fatal, although great weight is sometimes given to it.

IV. Coming to the extra-legal remedies, a word of explanation is necessary. In this group, I mean to include all those methods by which an illegal act is punished or prevented, but which have no legal basis, which are not provided for in any statute or judicial decision. For example:—If it were proposed to issue securities which were clearly beyond the authority of the company or municipality, investors would refuse to have anything to do with them and they could not be floated. There is no statute which keeps investors from buying these securities, but they will not do so and their refusal is usually as effective as any statute or court decision. Again.—If a person is not satisfied with the service rendered, he need not use it; there is no law to compel him to do so; and more than one undertaking has paid dearly for its short-

sighted policy through a loss of consumers or a failure to develop a large business.

But the number of extra-legal remedies is very limited, and their effectiveness very uncertain. The use of gas is to a large extent imperative; there are very few substitutes, and these are economically wasteful or socially inexpedient. The industry is naturally monopolistic and therefore not susceptible to the same influences that affect competitive business. To leave the protection of individual rights or the maintenance of efficient administration to extra-legal remedies is, therefore, very unsafe and unwise. In a few instances, it may be done, but they are the exceptional.

V. However limited in scope and ineffective in certain regards these remedies may be when considered separately, are they adequate when taken all together? It is true that when fitted one into the other, for each has certain advantages the others do not possess, they are much more effective and comprehensive than when taken singly. But still it is true that the English gas acts are not as complete in the direction of remedies and of means for ascertaining whether the statutory provisions are being obeyed as in the regulations which are to be enforced. There is room for much improvement, and one may not say that the remedies are wholly adequate and properly effective. One does not hear a long list of complaints upon this score, but this is due more to the fact that the companies and the municipalities generally aim to keep within the legal provisions, and consequently remedies are not so much needed, than to the adequacy of these remedies when they are needed. If a company is determined to break the law, it can find ways to evade enforcement which would be very hard to reach. Yet, a proper system of remedies and penalties ought to make it increasingly difficult for just such companies.

D 43. If judicial or administrative orders have been issued by central authorities relative to gas companies, state them, and give source and date of issue.

None of any importance could be found within recent years.

D 44. If any central board, commission or other authority has control or supervision as regards gas works, give statutory provisions relating to its powers and functions.

*Birmingham, Manchester.* Only as to loans and sinking funds (see inquiries D 22 and 25).

*Glasgow.* None of importance except D 25.

*Leicester.* As to loans and sinking funds, see inquiries D 22 and 25. The consent of the Local Government Board must be secured before local authorities outside of the borough may purchase the mains in their areas.

*London—So. M.* See inquiries D 16, 17, 21 and 28. The rents which may be charged for prepayment meters may be revised by the Board of Trade after 1907 upon request of the company or

the local authorities and every seven years or more from the date of the last inquiry for revision. It may also alter the boundaries of the district of supply if requested by two or more companies, a local authority or twenty consumers.

*Newcastle, Sheffield.* None of importance.

*Note.*—There is one additional provision that appears in nearly every act, especially in recent years since the housing problem became so acute. It is that 10 (or 20) or more houses occupied by laborers may not be acquired without the consent of the Local Government Board, the Secretary for Scotland or the Home Secretary, as the case may be.

D 45. What have been the effects of this supervision?

Good so far as it goes, but it does not reach far. Neither municipalities nor companies object to it.

D 46. What powers of supervision over the construction and operation of the plants of private companies does the city possess?

*London—So. M.* The London county council has power to appoint gas examiners, but the chief examiner is appointed by the Board of Trade. These examiners test the gas for candle power, purity, pressure and calorific value. Streets may not be opened except under the superintendence of the street authorities, and the work shall be done how and when they direct. The paving shall be promptly relaid, the obstructions properly guarded, etc. No new mains may be laid without a permit from the local authorities.

*Newcastle, Sheffield.* As to gas examiners and auditor, see inquiries D 17 and 28. The breaking up of streets shall always be under the superintendence of the local authorities, and the work shall be done when and how they direct. All obstructions shall be properly guarded, the paving promptly relaid, etc. The new mains may be laid without a permit from the local authorities. In Sheffield all extensions must be approved by the city.

D 47. What provisions has the city made for the exercise of its powers of supervision?

*London—So. M., Newcastle.* Advantage has been taken of all provisions and the proper officials appointed to see that they are executed.

*Sheffield.* A trained chemist has been appointed by the city and also an auditor as provided by law. In each case the salary actually paid is considerably above the legal requirement, as the company prefers to have good men at good salaries. The provision requiring approval of proposed extensions by the city prevents the company from spending its surplus profits in this direction and relieves it of the trouble of going into sparsely settled areas where it would not pay.

D 48. Has the company resisted the enforcement of the legal provisions regulating and providing for public supervision?

*Companies.* No record could be found of any important resistance in recent years.

D 49. What provisions have been found impossible of enforcement, and why?

See inquiries D 40, 41 and 42.

(Schedule II. for Gas, Electric Supply and Tramways has been placed at the very beginning of this volume.)

# ENGINEERING MATTERS

## British Gas Works

## (Schedule III)

By WILLIAM NEWBIGGING and JOHN B. KLUMPP

H 1. Data for year ending: Birmingham, Manchester, March 31, 1905; Glasgow, May 31, 1905; Leicester, December 31, 1905; Companies, December 31, 1905.

H 2. What process was used in making gas? If more than one, give approximate amount manufactured by each.

| (1) *Towns.* | (2) *Total Daily Capacity of Plant Approximate. M. Cu. Ft.* | (3) *Daily Capacity of Coal Gas Plant Approx. M. Cu. Ft.* | (4) *Per Cent.* (3) *of* (2). | (5) *Per Cent. of Coal Gas Made Last Year.* |
|---|---|---|---|---|
| Birmingham | 43,250 | 31,750 | 73.4 | 80 |
| Glasgow | 41,000 | 41,000[1] | 100 | 100 |
| Manchester | 25,400 | 18,900[2] | 74.4 | 77.8 |
| Leicester | 14,000 | 11,000 | 78.6 | 98.5[3] |
| London-So. M. | 66,000 | 66,000 | 100 | 100 |
| Newcastle | 16,500 | 15,000[1] | 90.9 | 94.3 |
| Sheffield | 18,000 | 18,000[2] | 100 | 100 |

H 3. What process was used in purifying gas? If more than one, give approximate amount purified by each.

*Birmingham.* Oxide of iron and lime.

*Glasgow.* Lime purification only.

*Manchester.* Oxide and lime.

*Leicester.* Oxide of iron—bog ore.

*London-So. M.* Lime and Weldon mud. Since October, 1905, oxide of iron has been substituted for lime.

*Newcastle.* Lime.

*Sheffield.* Oxide and lime.

H 4. Give brief description of undertaking.

[1] Enriched with cannel.
[2] Enriched with cannel and benzol.
[3] Water gas plant held in reserve.

## DESCRIPTION OF PLANTS.

*Birmingham.* The Birmingham gas undertaking manufactures a mixture of coal gas and carburetted water gas, the output of the year ending March 31, 1905, being about 80 per cent. coal gas and 20 per cent. water gas, further enrichment being obtained by the use of about 10,000 gallons of benzol. There are five gas manufacturing stations, including a small plant at Swan Village.

The Saltley works located in the northwestern part of the city, on the Duddeston Mill Road, are the headquarters of the engineer in charge, and are capable of carbonizing about 1,100 tons of coal, or producing eleven million cubic feet of gas daily. They have a railway siding on the Midland Railway, and are in rather good shape, although the general layout of the plant is poor. The gas holders are placed in the middle of the property dividing the manufacturing plant. The purifying, scrubbing and washing plants are separated by being irregularly placed in the yard, and although in two divisions are not handled independently of each other.

No. 1 and No. 2 retort houses contain installations of inclined benches, 416 retorts. The houses are provided with pan conveyors and mechanical arrangements for handling coal and coke. At the time of the visit the coke-conveyors were not in use, as experiments are under way to determine the cost and efficiency of the conveyors in comparison with hand labor.

The retort house No. 3 contains 470 horizontal retorts. These are in beds of 8's of the regenerative type, and the house is operated by eight sets of charging machinery driven by compressed air. The coke of this house is wheeled out and is stacked or loaded into cars by a gantry crane of large capacity.

A noticeable feature of the Birmingham layout is the lack of coal storage capacity, and, with the exception of this small quantity in hoppers before the retorts, all coal is stored in the open by being arranged in regular piles throughout the yard. The exhausters at this plant are of the reciprocating piston type, which are the first of the kind observed in our examination. The purifying house at the south end of the yard was badly damaged two years ago by an explosion and has been reconstructed with open sides.

The Nechells works are adjacent to the Saltley works across the Midland Railway and the river Rea. This plant is also rather badly laid out, as they have a coal gas manufacturing plant and a purification plant at extreme opposite ends of the property, with a large carburetted water gas plant between. The coal gas manufacturing plant consists of 416 inclined retorts, and has a present capacity of five million cubic feet daily. An additional building was erected for another five million capacity, but retorts have as yet not been installed. The scrubbers and washers of both sections are in place. A purifying plant for ten million is in place, consisting of four boxes of 35 feet by 40 feet each.

The carburetted water gas plant consists of six sets of Economie type, of one million cubic feet each. This plant has its own

exhausters, meters and purifying apparatus and oil tanks; the purifying apparatus consisting of eleven boxes 35 feet by 40 feet each, and oil tanks of 1,800,000 gallons capacity.

There are two holders, one four million and one eight and a quarter million cubic feet, with space for the erection of another eight and a quarter million foot holder. At these works there is also recently erected a very complete laboratory and a coal testing plant, capable of manufacturing about 200,000 feet of gas daily. The coal and coke at this plant is handled by coal handling apparatus, and the coke is loaded into cars or stored by a rotating gantry crane smaller than the one installed at the Saltley works.

The Windsor Street works have a capacity of about ten and a half million cubic feet of coal gas and four million cubic feet of water gas. It occupies an area of about 26 acres. The works are laid out well but are not capable of being extended, the entire ground being occupied. The retort houses are at one end of the property and consist of two long parallel buildings containing in all 756 retorts. They are of the horizontal "through" type, and are charged and discharged by automatic machines. There is an old retort house at the western end of the plant containing about 300 horizontal retorts that are practically useless, and have not been in use for some time.

The coal is received by high level railway siding from the L. & N. W. Railway, and the entire works are covered with steel viaducts to the average height of 20 feet. These works, like Saltley and Nechells, have no enclosed coal storage capacity with the exception of the space in front of the retorts, and the coal and coke is stored in the open.

The purifiers, scrubbers and washers are of the orthodox type, and there is nothing particularly original in their construction. The purifying plant consists of eight boxes 66 feet by 32 feet and six of 40 feet by 32 feet. At this plant, as well as at the Saltley works, they have a cyanogen plant for removing the cyanide from the gas by means of rotary scrubbers. The cyanides are worked into crystals and sold direct. There are two gas holders of about six and a quarter million cubic feet capacity each and one of two millions capacity at this plant; and it is worthy to note that they are built on the "twin" type—that is, the tanks were built at the same time with a narrow dividing wall. There are also five or six small holders at this point.

In addition to the coal gas, there is a carburetted water gas plant containing four sets of one million feet each, of the Economic type and construction. This plant is complete in itself, with its own purifiers, meters and exhausters and oil storage tanks.

The Adderley Street works are located in the southeastern part of the city and have been in use for a good many years. They are of 1,750,000 cubic feet daily capacity of coal gas. The works are subdivided by a canal and a street. The retort houses are in two different parts of the property and contain horizontal "through" retorts. The coal and coke is entirely handled by hand

and the retorts are hand-fired. The works are badly laid out and all more or less of antiquated construction. The cost of operation of these works must be specially high here, although it is stated that the gas is made nearly as cheap as at the other works. The plant, in our opinion, has greatly depreciated, and as an operative station should be abandoned in the near future, when the new works are extended to take care of the supply.

The Swan Village property is in the Borough of Bromwich, some five or six miles west from the center of Birmingham. It has a capacity of three million coal gas and one million carburetted water gas. One of the retort houses contains 16 benches of 8's, 20-ft. through retorts, which are full depth regenerators, and are charged and discharged by West's compressed air machines. The other houses contain 17 benches of 7's, of direct fired type, and are charged and discharged by hand. There is a railroad siding at this plant, and, as at the other works, coal is stored in the open. Condensers, scrubbers and washers are of ample capacity, and there is nothing unusual in their type. There is a cyanide washer for the recovery of cyanogen. The carburetted water gas plant consists of two sets of Humphrey & Glasgow's, having a capacity of 750,000 cubic feet each, and are complete with their own washing, scrubbing and purifying apparatus. There are two gas holders at this plant, one of two and one of one million cubic feet capacity.

*Glasgow.* In Glasgow there are four gas manufacturing stations: Tradestone, Dawsholm, Dalmarnock and Provan. The Tradestone works, covering an area of 15½ acres, are situated on the south side of the Clyde, in about the middle of the settled section. These works alone supply the whole of the area south of the Clyde. The site of the works is fully covered with plant and buildings, and the manufacturing capacity will not be further increased.

The coal is brought into the stores by means of an extensive system of railway sidings and stacked conveniently in position. The retort houses are situated at right angles to the coal stores and consist of four parallel stacks containing 640 mouthpieces. The settings are of the full depth regenerative types with single mouthpiece retorts. There is complete installation of coal breaking, elevating and conveying plant, together with Arrol-Foulis hydraulic charging and drawing machinery. The coke is dropped onto the lower floor of the retort house, and removed thence by means of small coke wagons on a narrow gauge steam railway. At the gable end of the retort houses there is an elevated steam coke handling plant, by means of which the coke can be loaded into wagons for shipment from the works or into carts for domestic requirements.

The condensers, scrubbers and exhausters are of the orthodox type and call for no particular mention. The boilers consist of two types, Babcock & Wilcox and Lancashire. The purifiers, 16 in number, are on the ground floor, in four sets of 4's. Lime only

is used for purification. There are four gas holders at this station, with a combined capacity of a little over seven million cubic feet. The governors in use are of a pattern invented by the late engineer and are of the remote control type.

The department owns the chemical works on the other side of the railway, which is leased to a contractor for the working up ammoniacal liquor and sulphate of ammonia. A noticeable feature of the works is that the lime used in the purification is brought from Ireland as limestone and burned in kilns on the works.

The Dalmarnock works has a capacity of eight million cubic feet per day. This plant, however, is for several reasons to be dismantled at an early date as far as the manufacture of gas is concerned, and has been shut down now for two years. These works are situated to the southeast of the city and connected with the railway by a low level siding. They are kept in a fair state of preservation and contain much apparatus of value and are still available. The principal value of these works is in the land and in its usefulness as a storage station.

The Dawsholm works are situated to the northwest of the city and have a combined area of 42 acres. These works were erected in 1871. In 1891 Temple works, belonging to an adjoining gas company, were acquired, and a tunnel was constructed under the canal to connect the two works. The manufacturing capacity of this station is now twenty million cubic feet per day. These works are well situated, being connected to two railway systems and a canal. The retort houses contain 2,158 mouthpieces, heated by furnaces of the full depth regenerative type, single mouthpiece retorts. The coal is brought into the retort houses by a high level siding, and the houses are completely equipped with elevators, conveyors, and charging and drawing machinery of the Arrol-Foulis type. The coke is removed from the retort houses by a narrow gauge railway into the yard where it is dealt with by means of grab cranes from an elevated coke landing platform. The whole of the condensing, scrubbing and washing plant is similar in character to the Tradestone works and is of ample capacity to deal with the maximum output of gas. The purifiers are in two sections, the boxes being on the ground floor. Operations are carried on with difficulty owing to the congested arrangements. The gas holders, eight in number, have a combined capacity of fifteen and a half million cubic feet.

There is a chemical works on the site for the production of sulphate of ammonia only, and a tar works recently constructed is situated on the other side of the railway convenient to the gas works. These tar works are rented to an outside contractor and are capable of dealing with the output of the plant.

The Temple plant as a manufacturing station is out of use, the intention being to utilize the plant for experimental purposes only. On this site stables have been constructed. The municipality also owns a number of workmen's houses closely adjoining the works.

Provan—The necessity for the erection of new works became evident some few years ago, and in 1898 a site was selected at the northeastern part of the city at Provan as being suitable. The area of the site is 123 acres, and it is conveniently situated for both railway and canal communication. The levels are irregular, but advantage has been taken of this to facilitate the handling of material. The design provides for the completion of these works in four units of twelve millions each, but up to date only one of these units has been provided. Very considerable expenditure has been incurred necessarily for the first unit, which will not be repeated when the necessity for the provision of the other unit arises, such as the construction of the main road, sidings, bridges and boundary walls, and railway connections. The offices and workshops which will be required for the whole four sections when complete have been erected.

The present coal stores have a capacity of 50,000 tons, and the coal is brought in and either stored, or dumped automatically into hoppers and breakers, the retort houses being equipped with complete automatic coal handling apparatus. The retort stack consists of 1,440 mouthpieces arranged in settings of twelve. These stacks are of the single retort type, and are heated by four sets of outside producers, containing six producers each, each producer handling 60 retorts. This style of heating is somewhat unique and is the design of the late engineer. The coke is dumped to the lower floor and handled by means of small wagons on a narrow gauge steam railway, and stored and handled by means of rather elaborate gantries and conveyors. The washing, condensing and scrubbing apparatus is of modern type, located in units so as to be conveniently extended. A notable feature in this outfit is the cyanide plant which removes cyanogen during the scrubbing process. The purifying boxes are arranged in one large open-sided house of twenty-four boxes in six sections. These boxes are 38 feet by 27 feet, and are arranged to receive the line stored on overhead distributing track and to be emptied by dumping direct into the wagons on the narrow gauge railway. This works also has kilns for burning their own limestone. The majority of the gas made at these works is pumped direct to the Dalmarnock holders by means of Parsons turbine pushers. There are two holders at present erected, of 8,500,000 cubic feet each, and provision is made for erecting three more of similar capacity. A plant for the manufacture of oil gas was installed at Provan, but was never completely finished or operated. This plant was intended for the enrichmen of coal gas.

In conjunction with these works there is a large chemical works for treating ammoniacal liquor and for complete distillation of the tar. This plant has been leased to a private contractor and receives the entire output of the works. Provision is made to extend the chemical works as the gas works is extended. There are a few workmen's cottages erected, extensive offices and considerable provision has been made for the comfort and convenience of

the workmen in the shape of reading rooms, bath rooms, and mess rooms. The workshops also are well equipped with tools and machinery for carrying out general repairs in the works. The buildings about the works are constructed out of bricks made from the clay taken out of the excavations by a plant which has been installed on the site.

*Manchester.* This undertaking manufactures both coal gas and carburetted water gas, during the year of this report making about 78 per cent. coal gas and 22 per cent. carburetted water gas. At present operating four works are being operated: The Bradford Road works, in the northeastern part of the city on Bradford Road; the Rochdale Road works, in the north central part of the city; the Gaythorn works, in the south central part of the city, and the Droylesden works, a small plant at Droylsden.

The Bradford Road works is the largest and most recently constructed, gas being first manufactured there in 1884. The site consists of about 53 acres, and the works have a capacity of 8,000,000 coal gas and 6,500,000 water gas. There are at present two retort houses, each containing 28 benches of horizontal through retorts, with eight and nine retorts per bench. These houses are provided with West's compressed air charging and discharging machines, the benches being of the full depth regenerative type. The condensers consist of three Morris and Cutler's water-tube and one Eclipse with vertical columns. There are four twin rotary exhausters of Gwynne & Company and Laidlaw & Sons. The scrubbing and washing plant consists of Livesey washers and Kirkham & Hulett's rotary and Clapham & Laycock's rotary scrubbers. The purifiers consist of 22 boxes with a total superficial area of 27,000 square feet. The station meters consist of three meters for coal gas, having a capacity of 175,000 feet each an hour. There are four gas holders having a total capacity of 6,800,000 cubic feet, and one of 7,000,000 cubic feet capacity. The coke handling apparatus consists of a steam swinging crane which has a capacity of dealing with 200 tons in 24 hours, lifting and piling the coke or loading same direct to the railway cars. The coke is brought to this crane by means of buggies running on tracks directly from the basement to the retort houses.

The carburetted water gas plant consists of eight sets of Humphrey & Glasgow's apparatus. In connection with this plant there are six Lancashire boilers, four blowing engines and fans, and two exhausters of the Dempster type. There is a relief gas holder 80 feet in diameter, and necessary oil tanks. The condenser scrubbers for water gas are installed in connection with the generating apparatus. The gas is purified in a new purifying house built entirely of steel and containing twelve purifiers, each 35 feet square, with space for four additional purifiers, lime being used for this purification. There are two station meters of 160,000 cubic feet capacity installed in the regular meter house for metering the water gas. The coal is handled at this plant by means of high level railway connection, the coal being dumped directly into

hoppers at retort houses or being stored in sheds under the tracks.

At these works there is also an experimental coal gas plant, complete in every detail from retorts to governor, with a capacity of 60,000 cubic feet per day. In 1892 they erected a sulphate of ammonia plant with a capacity of 40 tons per day, arranged in two sets for the manufacture of sulphate from liquor received from the various works. Also a plant for the manufacture of sulphuric acid from spent oxide. From these works there is a 36-inch independent pumping main connecting the Gaythorn works, and a 30-inch main connecting the Rochdale Road works.

The Rochdale Road works consist of a site of nine acres, with a coal gas manufacturing capacity of 6,000,000 cubic feet per day. There are four retort houses erected, three of which are in operation, the fourth one being abandoned and now used as a meter governor house and shops. The retorts are all of the horizontal through type with regenerative furnaces, two of the houses being operated by Woodward-cum-Foulis hydraulic stoking machinery, while the third has Woodward's stoking machines operated by gas engines. The condensers at this plant consist of a large rectangular horizontal condenser, and one Eclipse water-tube of four batteries. The exhausters consist of three twin sets built by George Waller & Son, also three Livesey washers, 4,000,000 cubic feet each, the gas going through these in parallel. The purifiers consist of eight boxes, each 32 feet square, four boxes 50 by 30 feet and four boxes 45 by 40 feet. There are two station meters, each 175,000 cubic feet an hour. There are five gas holders at this site, two about a quarter of a mile away at the Newton gas holder station, the five having capacity of about 4,000,000 cubic feet. The coal is brought into this plant by high level railway which dumps direct into the coal sheds and hoppers that are parallel to the retort houses. The coke is now handled and screened by hand, but apparatus is being installed which will provide hoppers and cranes for supplying domestic coke without handling.

The Gaythorn works have an area of about nine acres and have a manufacturing capacity of about 3,000,000 coal gas. There are at present two retort houses in use, one consisting of 18 benches of six retorts, 20 feet long, and the other 18 benches and eight retorts, 20 feet long, both of the incline type. They have a third retort house containing horizontals that is being dismantled and was out of use at the time of investigation. The condensing plant consists of a large rectangular condenser and nine atmospheric condensers. The washing and scrubbing plant consists of two Livesey washers, one Stephenson's extracting tower, and two Holmes rotary washers. The purifiers consist of 16 boxes with a total area of 10,000 square feet. There are three station meters with 100,000 cubic feet per hour capacity each, and seven gas holders with a total capacity of about 6,000,000 cubic feet. The coal is brought to the works by high level railway sidings, the cars being emptied into a large hopper coal breaking machine, from

which the coal is elevated direct to the retort house bunkers. The coke is removed by conveyors placed in front of the retort settings, where it is hoisted to an elevated stage and delivered in hoppers which serve to load wagons for domestic purposes. The coke elevating crane is capable of piling coke in the open for storage purposes.

The Droylsden plant is a site of about five acres and has a manufacturing capacity of about 400,000 cubic feet of coal gas per day. It has one retort house, five benches of sixes, 15 feet long, of the incline type, that have been in use since 1892. It has one water pipe condenser, two exhausters, two washers, one tower scrubber, and one Kirkham & Hulett's washer-scrubber. There are four purifiers, each box being 14 feet square, two station meters, and two gas holders of 600,000 cubic feet total storage capacity. These works supply the town of Droylsden, about four miles from Manchester.

In addition to these manufacturing plants the undertaking has a four acre piece of property on the Manchester Ship Canal, where they have erected oil tanks for the storing of oil for the manufacturing of carburetted water gas. They have a piece of property of about one acre on Poland street upon which is erected a three-story building used as a meter and stove shop and as a general store. On the same piece of property they have a stable and machine shop and smithy, and room for the storage of pipes and heavy fittings. On Whitworth street they have a piece of property of about a quarter of an acre on which buildings are being erected for the use of the distribution department.

*Leicester.* Prior to 1875 the Belgrave Gate works, with a capacity of nearly three million cubic feet of gas daily, were the only works in the town. All the coal and raw materials have to be carried to the works, owing to the absence of railway connections. In 1875 the gas company purchased the 32 acres which now form the site of the Aylestone works. In 1878 the gas undertaking was transferred from the company to the municipality, and within the last few years an additional site of about 150 acres has been purchased outside of and to the north of the borough, on which a future new works is contemplated.

The Belgrave Gate works consist of 3 retort houses and 3 intermediate coal and coke stores built parallel with each other. These retort houses contain benches of half depth non-regenerative type. Firing is done by hand, there being no automatic coal or coke handling devices. The condensing, purifying and scrubbing equipment is of the orthodox type, and contains no special features worthy of mention. At this plant there are three holders, two of rather small capacity, and in the event of shutting down of this plant, this site would make a good storage and distributing station. The abandonment of this station as a manufacturing station is only a question of a short time, which is dependent on the increase in the sales of gas. It was thought two years ago, owing to the constant increases, that it would be necessary to build

new works in 1907, but owing to the decrease in sales of last year, the construction of these works has been temporarily postponed, and the Belgrave plant will continue operation a few years longer.

The Aylestone works are located in the southern part of the borough, about 1½ miles from the center of the town upon Aylestone Road, and are connected to the railroad by high level sidings. These works are rather elaborately built, everything being of very substantial character, and are spread over considerably more ground for their capacity than is usual in gas works construction. The capacity of the plant is eleven million cubic feet daily, including a two-million cubic foot water gas plant. There is no room provided on the site for further increasing the coal gas manufacturing capacity.

The coal gas manufacturing plant is divided into two sections, the gas being treated individually in these sections from retort house to holders. Retort house No. 1 contains 19 benches of 9's and five benches of 8's; retort house No. 2 contains 24 benches of 9's and five benches of 8's, making a total of 467 retorts. These are horizontal 20 foot through type, with full depth regenerators. There are two boiler houses, containing Lancashire and single B. & W. boilers. There are two exhauster houses, one containing two twin exhausters of the Gwynne make, the second containing three exhausters of the Donkin make. There are two tower scrubbers, 12 feet by 58 feet and three Livesey washers, two of which contain oil for the removal of naphthalene; one Kirkham & Huelett rotary washer and one Walker's patent purifying machines. The purifying boxes are constructed in the open on the ground level with buried connections, with parallel oxide sheds. The first section contains 12 boxes 24 feet by 24 feet and the second section 15 boxes 32 feet by 32 feet; Weldon mud and oxide being used exclusively for purification purposes. There are two meter houses, each containing two meters of 80,000 cubic feet per hour capacity each.

The carburetted water gas plant consists of three sets built by the Economic Gas Construction Company, of one million cubic feet capacity each. This plant is complete in itself with engines, blowers, pumps, condensers and scrubbers. It is arranged in a substantial building containing its own boilers, engines, meters and gas testing apparatus adjacent. It has its own sets of purifiers, consisting of seven boxes 32 feet by 32 feet, an oil storage tank of 400,000 gallons capacity, and a relief holder of about 200,000 cubic feet capacity. This plant is only used for emergency purposes, or to carry them over the peak of maximum consumption.

The works is thoroughly equipped with shops, including machine shop, carpenter shop and smithy, a separate locomotive shop and a complete stove and meter repair shop. There are also men's reading rooms and mess rooms. During the construction of these works the river course was changed and very substantial river walls were built. A small island was appropriated and equipped for recreation and bathing purposes for the men.

In about 1886 about three and one-half acres of this property were devoted to the erection and construction of chemical works. These works comprise a complete sulphate and ammoniacal plant, as well as a plant for the treatment of tar by-products, Claus sulphur recovery plant, also ample storage capacity for ammoniacal liquor, tar, sulphuric acid and extensive pitch beds. There is a carbolic acid and anthracene cake plant, and provision is also made for the recovery of a certain oil for naphthalene treatment. This oil is used in the plant in ordinary Livesey washers for the prevention of naphthalene, and is also sold to other gas works for the same purpose. In the construction of this plant, the nature of the ground necessitated special care in the foundations, and in some sections it was necessary to go to the depth of twelve or fifteen feet, which increased the cost of construction. There are about eleven and one-half miles of railway siding and lines about the plant, which reach all points in the gas works and chemical works. The works has its own locomotive and rolling stock equipment. The Aylestone Road front of the works is very pleasing in appearance, and consists of handsome offices with clock tower, gateway, governor house and about twenty workmen's cottages.

*London—South Metropolitan.* The different gas works of the South Metropolitan Gas Company, six in number, are: Old Kent Road, Vauxhall, Bankside, Rotherhithe, Greenwich and East Greenwich. These works have a total daily manufacturing capacity of 66,000,000 cubic feet.

The Old Kent Road works are situated alongside the Surrey Canal, and the whole of the coal used is brought by barges to the company's wharf. The works may be divided into two sections, one being the original works of the company, and the other a larger section, the extension of the original works. The original section is complete in itself and capable of being modernized, but at present it is practically out of use. The second section, though old, has been completely modernized recently. The coal is landed by means of cranes and grabs into wagons, and these are run into the coal stores, which are conveniently situated parallel to and alternately with the retort houses. The total storage capacity for coal is 40,000 tons.

The retort houses, four in number, contain 1,280 retorts, set 10 retorts in a bench, and these are heated by a central producer gas plant situated at the gable ends of the houses. The producer gas is taken through 5-foot diameter steel tubes, one on each side of each stack. The tubes are cased with brick and run from one end of the house to the other. From the main tubes the gas is carried to each setting through 12-inch cast-iron pipes, and there utilized for the heating of the retort settings. The charging and drawing machines are of the Arrol-Foulis and West type, compressed air, hydraulic and steam being the motive powers. The coke handling and stacking plant comprises hauling gear driven by gas engines situated outside the gable ends of the house, hauling the coke wagons from the lower floor of the house up an in-

clined plane to overhead rails on trestles, two of which are 350 feet in length. The manufacturing plant in this section is worked with about 14 men to a house on each shift of 8 hours, and a daily quantity of 250 tons of coal is dealt with by these men. The boilers comprise Lancashire and the Babcock & Wilcox type.

The condensers are of the Carpenter reversible form and are of ample capacity. The gas passes through the condensing, scrubbing, washing and purifying plant in two streams. Oxide has been exclusively used for purifying since last October, up to which period lime only had been used. The original retort house is parallel to the canal and at present contains 300 retorts which are charged and drawn by hand. The intention of the company is to take out the present retort stacks and put in more modern stacks. The condensing, scrubbing and purifying plant is of the same style as the later sections and of ample capacity. Some of the old original moving machinery is still in use. The gas holders, six in number, have a total storage capacity of eleven and a half million cubic feet. This works is connected by independent mains to all the other stations of the company, with the exception of Vauxhall.

There are extensive repair and outfitting shops comprising machine shop, carpenters' shop, erecting shop, meter shop, stove shop and general stores. Not only are all the necessary repairs to the plant and to meters and stoves carried on here, but much of the construction work of the plant is also done by the company's workmen. The main offices of the company are situated on these works. On this plant there are also extensive stables and motor car sheds for taking care of the equipment. There is also a small chemical works consisting of sulphate plant and Claus sulphur recovery plant. There is extensive unoccupied property which is used as recreation grounds for the company's employees. Some of the unoccupied spaces is also devoted to gardening purposes for some of the men. The company recently have acquired property around the main entrance along Old Kent Road with a view to getting better egress and ingress facilities.

The Vauxhall gas works is a congested plant manufacturing about thirteen million cubic feet daily on an area of about five acres. It is located on the river front adjacent to Vauxhall Bridge. The storage station of this plant is located on Kennington Lane, about half a mile away. The manufacturing plant consists of four retort houses that are built at right angles to the river front. The coal stores are irregularly placed, being alongside the river front in some cases and parallel to the retort houses in others. Coal is received by barge and unloaded by means of steam cranes and grabs and distributed by means of a high level narrow gauge road to dump carts pushed by hand.

The retort houses contain 23 benches of 10's. They are 20-foot through retorts all hand-fired by scoops. This house is too narrow to conveniently install automatic machinery. The second retort house contains 15 benches of 10's and one bench of 6's, 20-foot through retorts. The charging and discharging is accom-

plished by means of West's compressed air machine. The third retort house contains 22 benches of 10's, and is hand fired. This house is wide enough for the adoption of automatic machines if necessary. The fourth retort house contains 26 benches of 10 retorts, and is charged and discharged by means of Arrol-Foulis hydraulic machines. These four houses contain a total of 1,732 mouthpieces, and the coal stores are capable of storing 15,000 tons. Coke is dumped to the lower floors and forked into wagons on the narrow gauge, and either loaded into barges direct or prepared for domestic use.

The condensing capacity at present is small but is being increased by the addition of large tubular condensers in which the water is cooled through forced draught cooling towers. There are three Livesey washers, three tower scrubbers, and three rotary washers, which are somewhat deficient in capacity for the output of the plant. Purifying is done now entirely by means of oxide, which was started in October, 1905. There are 14 boxes, the gas passing through in two streams, with four catchboxes. They are deficient to about 50 per cent. in purification. The purifying houses have overhead oxide sheds and one house, in which the boxes are on the ground level and have two overhead oxide sheds. The boilers, six in number, are of the Lancashire type, and there are hydraulic engines and accumulators and air compressing engines for operating the charging machines.

There are extensive shops at this plant, in which they do all their own repairing and assist in construction work. The plant is fairly well covered by means of a narrow gauge elevated railway whereby they are able to handle their coal, utilizing an open coal store at one end of the station. The works are bisected by a small creek which enables river barges to enter with all materials at high tide. The local manager's office is situated at this plant as well as a small show room and complaint desk. There is further a workingmen's institute with reading room and meeting hall.

The holder station mentioned above occupies a plot of ground half a mile from the works and contains five holders. These holders are connected to the main works by three distinct mains and have a storage capacity of ten and a half million cubic feet. On this property are also the three station meters and the governors, as well as three distinct installations of fan pushers for raising the pressure to the various parts of the district.

The work of gas manufacture is carried on with difficulty owing to the congested arrangements.

The Rotherhithe station is located on the south side of the Thames, adjacent to the Surrey Commercial docks. It occupies a space of about six acres and has a manufacturing capacity of six million cubic feet. It is located on the Thames and has wharfage facilities for barges as well as steamers. The coal stores are arranged both parallel and at right angles to the river, and have a capacity of 9,000 tons. Coal is raised from barges and steamers by means of cranes and grabs and distributed to the stores

and retort houses through an overhead railway. No. 1 retort house contains 28 benches of 10 retorts, they are 20 feet through, full depth regenerators. The second retort house, parallel to the river, contains 19 benches of 10's, each of the same type. These retorts are charged and discharged with West and Arrol-Foulis machines. The coke is quenched and dropped into wagons on the lower floor, elevated by elevators to the overhead narrow gauge railway, and either run direct to the barges on the river front or distributed on piles in the open. This overhead railway also serves to handle the oxide for purifying.

The condensing, washing and scrubbing plant is of ample capacity for the gas made. It consists of tower scrubbers, Livesey washers and Carpenter reversible condensers. There are 12 purifiers, the gas passing through six boxes in two streams. These boxes are on the ground level and are emptied and filled by means of conveyors in which the oxide is elevated to revivifying floors overhead. The engine room contains four exhausters, and also hydraulic and compressed air machinery for the charging machines, also engines for operating the pumps in groups.

There are three holders on this site, with a total capacity of 2,450,000 cubic feet. The storage is insufficient for the gas made at this plant, and the surplus is sent down under pressure to the Old Kent Road works. There are three meters in the meter house of ample capacity. There are carpenters' shops, blacksmiths' shops, and machine shops in which they do all their own repairs and assist in construction work. There is an institute consisting of reading and meeting room for the workmen. There are offices, laboratory, and general stores for the operation of the plant, as well as consumers' complaint offices. There is also a cottage for the resident foreman.

There are four main pipes leading from these works in addition to the pumping main to the Old Kent Road. The works occupy the entire plot of ground and there is no room for extension without purchasing additional property.

The latest and largest gas plant of the company is that at East Greenwich. The site of this works was purchased in 1881, because of the rapidly increasing demand for gas in the 50 to 60 square miles which form the company's area of supply. The land first acquired was 120 acres, but in 1900 Parliamentary powers were obtained for a further purchase of about 130 acres. The works are located at Blackwell Point, or a point of land surrounded on two sides by the River Thames at the eastern section of the city. The installation provides for an individual capacity of sixty million, and is so arranged that sections of five million each may be added as necessary.

The present layout consists of five retort houses, about 485 feet long and 73 feet wide, with coal stores between each house, each coal store having a capacity of about 6,500 tons. The retort houses, with the exception of the fifth house, each contains three stacks of 15 benches of retorts each, the four houses having a total

of 3,600 mouthpieces. The fifth house has been partly filled by a setting of twenty retorts to a bench of 13 inches in diameter each, which are an experiment for obtaining better results in the manufacture of gas. These were not running at the time of investigation. No. 1 retort house has Arrol-Foulis hydraulic stoking machines, while Nos. 2, 3 and 4 retort houses have West's gas engine driven charging and discharging machines.

The coal is unloaded from steamers and barges by a large jetty or pier extending in the river, provided with traveling cranes and Home grabs, which unload the steamers into continuous overhead hoppers, under which railway cars run. These cars travel inland over a main viaduct and run by means of spurs into the coal stores between the retort houses, dumping the coal direct without handling. A ship of 1,250 tons can be discharged in 7½ hours with this equipment. The coke is removed from the retort houses at the southern end of the railroad tracks and small cars that are hauled in and out by locomotives and distributed from trestles over the open coke storage ground or loaded direct into wagons or railway cars, as desired.

The condensers are 36-inch spiral pipe condensers, air-cooled, reinforced by water condensers. The boilers, exhausters, pumps and workshops are arranged in a line of buildings directly north of the coal stores on the other side of the railway viaduct and consist of twelve Beale exhausters, direct-driven and arranged in line, so that they may reinforce each other. The gas passes through the exhausters through batteries of Livesey washers, which are worked in sets of threes. There are 12 tower scrubbers, 16 feet in diameter and 68 feet high. Thence the gas goes to six sets of purifiers, four of which are charged with lime and two with oxide of iron. Each purifier is 70 feet long, 30 feet wide and 5 feet deep. From the purifiers the gas passes through ten meters, each with a capacity of three and a half million cubic feet. These meters are set in the ground in concrete tanks, to save the expense of meter houses, and to preserve a uniform temperature of the meter. The tar and liquor tanks are arranged in concrete pits, under the main line of the railway viaduct, north of the retort houses. The concrete walls of these tanks at the same time support the viaduct structure. There is ample storage capacity for both tar and ammoniacal liquor.

At these works there are complete carpenter and machine shops, capable of handling all repairs and assisting generally in the construction work of the plant. Provision is also made for the accommodation of the workmen in the way of reading rooms, locker rooms and bathing facilities.

There are two gas holders at the East Greenwich works. The storage capacity is never intended to exceed forty million cubic feet, as it is the intention of the company to eventually make the Old Kent Road station the central distributing point and to pump the gas from East Greenwich there. There are two holders now at this plant, one of eight million cubic feet capacity and 250 feet

in diameter and 44 feet deep; and the other of twelve million cubic feet capacity, 300 feet in diameter and 32 feet deep—being the largest holder at present in England. The gas is forced from this station to Old Kent Road and other works by an installation of centrifugal fans, operated by gas engines. It also supplies gas direct to the Woolwich and adjoining districts. The object of these fans is to increase the growing capacity of the main and also to create a uniform pressure on the system, independent of that thrown by the gas holders.

A new chemical works has been erected for the manufacture of sulphate of ammonia and necessary sulphuric acid from the spent oxide. This plant is so built as to be extended to always equal the capacity for residuals in proportion to the amount of coal gas manufactured.

The company has two small manufacturing plants, one located at West Greenwich, at the mouth of the Deptford Creek. This contains two small retort houses, one with filled incline and one with horizontal retorts. This works has a capacity of four million cubic feet, and is complete, with washers, scrubbers, condensers and purifiers. It is rather cramped and probably will be abandoned as extensions to the East Greenwich plant are made. The plant is self-contained, with the exception that the holders are several squares from the manufacturing station and are rather well situated for convenient distribution to this district. The plant should manufacture gas rather cheaply, but it would hardly pay to rebuild and modernize it when the present machinery ends its usefulness. The other property is at Bankside, on the south side of the Thames, below Blackfriars Bridge. This plant is a small coal gas plant, is rather congested, and has a capacity of two million cubic feet. It is complete in itself.

*Newcastle.* The present gas works consist of Elswick, opened in 1859; Redheugh, in 1876, and the St. Anthony site, acquired in 1898. The Elswick gas works are situated on the north side of the Tyne and have a capacity of five million cubic feet daily. The retort houses contain two parallel stacks of benches of 896 mouthpieces. They are 20 feet through retorts and the settings are more or less antiquated and of inefficient type, and are to be replaced in the course of the next few years. The coal is brought into the works by a high level siding into the coal stores and stacked without handling. The arrangement of the condensing, scrubbing and purifying plant is poor and rather unsystematic, and there is practically no room for extension. The purifying boxes are deficient in capacity to the extent of nearly 50 per cent., and are of the twin type, set direct in the ground, and are filled and discharged on the same level. The capacity of the scrubbing and condensing plant is adequate.

The storage capacity of these works is very small, but the gas made here is delivered to the various other holders of the system. The chief engineer's office is situated at these works, as they are the most central of the system. There is also a complete plant for

testing coal, as well as complete laboratory and workshop equipment. A sulphate of ammonia plant is built at these works with a capacity to deal with the liquor made at this place, and tar is sold in bulk. Generally speaking this works is well situated, but it has been completely outgrown and the producing capacity is more likely to be reduced than increased. There is a possibility of the land being purchased by adjacent industries. Part of the property bordering on the river front is considerably lower than the rest of the site, and is rented to a lumber company and used as a storage yard. The area of this works is about 10 acres.

The Redheugh works are situated in Gateshead on the south side of the Tyne, about one mile from the center of the Newcastle district. It covers an extent of about 25 acres and is the largest manufacturing station. It has both railway and river connections, although all coal is at present received by rail. The works consist of four retort houses containing 1,562 mouthpieces. These are arranged in 20 benches of 8's and 69 benches of 9's, all 20 feet through retorts of the full depth regenerative type. The charging and discharging apparatus consists of West's compressed air machines with the exception of No. 1 retort house which is equipped with De Brower's electric charging and discharging machine.

The coal is received in retort houses by high level railroad sidings and dumped direct into coal stores, which are parallel to the retorts, without handling. Crushing, elevating and conveying machinery are generally installed. There is an installation of hot coke conveyors, but the use of this has been dropped. The works generally are divided into two sections, each section being equipped with its own scrubbing, washing, and purifying plant, which is ample in capacity and of the orthodox type. Purifiers are all on the ground floor and are filled and emptied on the same level. Lime is used for purification. The plant is equipped with repair shops, fitting shops and a laboratory. The works generally are pretty well covered with railway conections, so that material for all equipment can be handled at direct points.

At this site there is also a complete carburetted water gas plant with scrubbing and purifier plant and relief holder. There are three water gas sets with a total capacity of about two million cubic feet a day. There is also a chemical works for the manufacture of sulphate of ammonia of sufficient capacity to handle the output of the plant, and in addition a Claus sulphur recovery plant. The tar is sold in bulk, being pumped direct to the contractor's works.

There are five holders at these works with a total capacity of about seven and three-quarter millions, any excess of gas being sent to the five-million-foot holder at St. Anthony by means of gas engine driven pushers through a 27-inch and 24-inch independent pumping main, which also connects the Elswick works. The general output of gas from this station crosses over the Redhough Bridge (owned by a company partly controlled by the gas

company), and, with the main output of the Elswick plant is supplied through a new governor house erected near the Elswick works and delivered through nine governors to the general distribution system. The scheme of distribution arranged by the engineer is such that it enables the outlying districts to be supplied with gas through mains which are not tapped en route, and consequently allows consumers, whether near the gas works or otherwise, to be amply supplied at a suitable pressure.

The St. Anthony site was acquired in 1898 and covers an area of 68 acres. At present the only structure on the site is a gas holder with a capacity of five million cubic feet. The company's engineer is engaged on the preparation of plans for a manufacturing plant to be erected on this land, and the works will be erected in sections, the first of which is intended to be completed by the time the present works are outgrown.

*Sheffield.* There are three gas works: Effingham Street, Neepsend and Grimesthorpe, taking them in the order of their age. Effingham Street has an area of five acres and a producing capacity of about four million cubic feet of gas daily. One of the drawbacks of the station is that it has no railroad connection, and situated as it is in the heart of the city with improved property all round, its capacity cannot be greatly increased.

The retort house contains twenty-two benches of 7's, direct fired, and eleven benches of 8's, with regenerative furnaces. There are eight benches of 8's now in course of construction with full depth regenerators. The intention of the company is to do away with all direct-fired settings, substituting regenerative settings in their place. The retort houses are substantially built of gray stone, and though at present the system of firing is by hand, the question of installing charging and drawing machinery is under consideration, the houses being sufficiently commodious to permit of this without structural alterations. The present system of handling the coal is antiquated and costly. The condensing, scrubbing and purifying apparatus is ample in capacity, and being of the ordinary character does not call for any special mention. Both lime and oxide are used for purifying purposes. The purifier boxes are housed in substantial buildings. There are three gas holders, with a total capacity of 2,275,000 cubic feet.

The Neepsend works have a capacity of nine and a half million cubic feet per day. The works are situated in the northwestern portion of the city about one mile from the center. The site is completely occupied with buildings and plant, the only spare land being a plot across the road, which can only be utilized for gas storage purposes. The coal is brought in by a high level railroad siding, and is dumped direct into the coal stores and stacked without handling. The retort houses are three in number. The first two houses are in one continuous line, running parallel with the railway. They contain twenty-seven benches of 7's and forty-six benches of 8's. The retorts are throughs and are heated on the regenerative system.

They are completely fitted up with machinery for crushing, elevating and conveying the coal. There are no particular coke-handling appliances, but the majority of the coke is crushed separately for the domestic trade. The works is very deficient in coke-storage capacity. At this plant the cooling, exhausting, scrubbing and purifying plant is equal to the producing power of the works. Oxide is used in the purifier boxes, lime in the catch boxes. Some of the purifier boxes are erected in substantial enclosed buildings, others in open buildings. There are five gas holders, four with a capacity of one and a half million cubic feet each, and one with a capacity of about eight millions, or a total working capacity of fourteen million cubic feet. Particular attention is drawn to the well equipped workshop and stores, which are a noticeable feature of this station.

The Grimesthorpe works are situated in the eastern portion of the city about 2½ miles from the center of the town, the erection of which was begun in 1896. It has an area of about 14 acres. Its capacity is 5,000,000, but will ultimately be 10,000,000 cubic feet of gas daily. The coal is brought in by railroad siding to the gable ends of the coal store. The wagons are emptied by hydraulic power into coal hoppers. From this point the coal is elevated, conveyed and distributed to any point in the coal store. The retort house contains 30 benches of 10's, with 20-foot through retorts, and so arranged that its capacity can be increased by simply adding to its length, the coal storage being increased in a like manner. The retorts are charged and discharged by 2 sets of West's compressed air charging and discharging machines, which are loaded automatically from hoppers. The coke discharged from the retorts drops into catchers where it is quenched and further dropped into steel wagons, which are hauled by rope haulage to a steel trestle outside the retort house, and automatically dumped into the coke crusher or into the coke storage. The arrangements for removing the coke from the retort houses, and when outside preparing it for distribution, are particularly good.

The condensers have a capacity of five million cubic feet. The tower scrubbers a capacity of ten million cubic feet. The rotary scrubbers a capacity of five million. The tar and liquor tanks are adequate for ten million. The engine and exhauster, meter house and shops are built ready to receive plant of a capacity equal to ten million, though at present the plant installed therein is of five million capacity. The purifiers with a capacity of five million cubic feet are housed in substantial buildings, and are capable of being readily duplicated. There are two gas holders with a capacity of 1,800,000 cubic feet each, or a combined capacity of 3,600,000 cubic feet. The storage capacity is apparently less than it should be, but the probable intention of the company is to make Grimesthorpe a manufacturing station more than a storage station, and any future extension of the storage will probably be adjacent to the Neepsend works. At these works they have a benzol enriching plant. There is a fully equipped

workshop with all the tools and machines necessary for carrying out repairs to the plant.

At this station there is a chemical works for the manufacture of ammonia sulphate and burning from all the stations, the ammoniacal liquor being pumped direct from the Neepsend and Effingham works. All the tar is sold under contract. The whole of the works is enclosed by a boundary wall or road embankment, two small lodges being built at the entrances.

## DISTRIBUTION SYSTEMS.

*Birmingham.* The distribution system of Birmingham consists principally of cast iron mains with bell and spigot joints and some few turned and bored joints. The sizes were obtained in detail. The average length of services was given as 33½ feet, which is considerably longer than the services of any of the other undertakings, but this is probably due to the fact that it is not generally the practice in Birmingham to lay two mains in a street.

The distribution records of Birmingham were in very good shape, the undertaking having two sets of maps, one of which was a large sectional map showing the mains in detail. The shops connected with the distribution department are rather small for much of the work, but this is accounted for by the fact that much of the work of main laying, service laying and house piping is done by contract. Birmingham meters are generally of the wet type, including prepayments, which is rather unusual. Some few consumers own their own meters.

*Glasgow.* The system consists of about 900 miles of pipes, varying in sizes from 48-inch down and consisting of cast iron pipe with turned and bored joints. The exact sizes of these mains were not obtained in detail, as apparently no lists of them were made up. The mains are generally laid under the foot paths, and there being two mains to a street the services were averaging only about 15 feet. These services were of wrought iron, generally laid in wooden troughs and filled with pitch. The meters were principally of the dry type, and only during the last two years has any effort been made to extend the prepayment system.

*Manchester.* The sizes of the mains were obtained in exact detail, as the department publishes annually a summary statement or description of the works and property. They are cast iron with turned and bored joints and in many cases substantially laid on concrete. This seems rather a costly and extravagant method, but if reference is made to the percentage of gas unaccounted for, it will be seen that the result justifies the expenditure. The unaccounted for gas is lower in Manchester than in any of the undertakings examined. The street main records consisted of maps that were in very good shape and showed the location of the mains in more or less detail. The services are of extra heavy steam weight piping and are laid generally in wooden troughs and filled. They are tested to 200 lbs. pressure.

The distribution system is not under the supervision of the engineer, but under a separate department which reports to the general superintendent. From the distribution costs and charges, it is apparent that this department is not run as economically as the works department. The practice at Manchester to allow plumbers and private contractors to set the city's meters, the city paying the plumber and contractor for the work done, is unusual, and is not consistent with the best practice.

The meters in Manchester are generally of the wet type, although all types and assortments were found in use.

*Leicester.* The mains are of cast iron pipe with lead joints, laid generally under the foot paths, all the principal streets containing two mains, one on each side. These mains vary in size from 36-inch to 3-inch. The exact detail of mains at first was not obtainable, but afterwards was given to us by the engineer, who summarized all but the 4-inch and 5-inch pipes which were grouped. These were individually measured up from the street main maps, which were laid out in sections, showed the size and location of the mains in considerable detail, and apparently were in good shape.

All distribution work in Leicester is under the direction of the engineer. The services are all of wrought iron and are generally covered with coal tar, the length of the service being approximately 12 feet. The meters are generally of the dry type, although a considerable number of the wet meters are in use.

*London.* The mains of the South Metropolitan Company are from 48 inches down, exclusive of large pumping mains, connecting the various works. These mains are given in exact detail as to sizes. There are sectional maps of the city showing the location of the mains. In the principal streets there are two mains to a street, although this practice is not generally followed out throughout the district. The services average from 20 to 25 feet in length, and are of wrought iron pipe, generally coated with coal tar. There are 302,625 meters in use, about two-thirds of which are of the dry type. About 9,000 consumers own their own meters.

*Newcastle.* The mains vary in size from 36-inch downward. They are cast iron pipe with lead joints. The records of these mains are not in exact detail, as the company is very old and the original records were not kept as carefully as they should have been, although within the last seven years complete maps and data have been recorded. The street main maps were sectional and showed the location of mains and services in considerable detail as far as they were known.

The services are wrought iron, laid in wooden troughs, filled with pitch. They average 18 feet in length, as but one main is laid in a street, with the exception of the principal streets of the town, where they are laid on each side. The meters are all of the dry type.

*Sheffield.* The mains vary in sizes from 48-inch down to 2-inch. There is a high pressure system of pumping mains con-

necting the various works and also district governors. The city is an exceptionally difficult one in which to distribute gas, there being differences of nearly 700 feet in elevation within the area supplied, but a most desirable system of pressures is maintained by means of the high pressure distribution system and individual district governors that isolate and govern uniformly the elevated districts.

The distribution records are in excellent shape. There are sectional street main maps showing the location of all mains and large services as well as individual records of extensions, showing the exact lengths and sizes of all the mains in the ground. The mains are generally laid under the foot paths, and as all the principal streets have two lines, the average length of services is approximately 10 feet. Owing to the peculiar subsoil of Sheffield, which consists nearly entirely of ashes and cinders from the iron works, wrought iron pipe is found, in many cases, not to last more than a few years, and, owing to this fact, it has been the general practice in Sheffield to lay lead services. This work has to be done carefully, and the connections to the mains are made by means of brass ferrules.

The company has adopted a compensating wet meter with cast iron case, has very few dry meters in use and is in shape to manufacture its own meters. The manufacturing and distribution departments are entirely in the hands of one engineer.

H 5. Holders and mains at end of year.

| *Towns.* | *Number of Holders.* | *Total Capacity in M. Cubic Ft.* | *Mileage of Mains.* |
|---|---|---|---|
| Birmingham | 20 | 39,777 | 740 |
| Glasgow | 18 | 44,370 | 900 (Est.) |
| Manchester | 20 | 24,500 | 858½ |
| Leicester | 8 | 10,200 | 251½ |
| London-So. M. | 21 | 48,483 | 1,162 |
| Newcastle | 9 | 14,931 | 648 |
| Sheffield | 11 | 21,617 | 538 2/3 |

H 6. Meters and services at end of year.

| (1) *Towns.* | (2) *No. of Meters.* | (3) *No. of prepayment meters.* | (4) *Per cent. of (3) of (2).* | (5) *No. of services approx.* | (6) *Average length approx. ft.* |
|---|---|---|---|---|---|
| Birmingham | 109,865 | 36,376 | 33.1 | 120,000 | 33½ |
| Glasgow | 238,038 | 10,236 | 4.3 | Note [1] | 15 |
| Manchester | 152,165[2] | 47,865 | 31.4 | " | 18 |
| Leicester | 53,932 | 29,145 | 54.0 | " | 12 |
| London-So. M. | 293,731 | 190,640 | 64.9 | " | 20-25 |
| Newcastle | 81,534 | 35,790 | 43.9 | " | 18 |
| Sheffield | 81,926 | None. | .... | " | 10 |

[1] No exact records were kept, but the number is estimated as equivalent to the number of meters (column No. 2).

[2] Of these, 148,529 were owned by the municipality and 3,636 by consumers.

H 7. Were all services metered?

Yes, except public lamps and in Glasgow some stair jets.

H 8. Apparatus rented.

| *Towns.* | *Number of Stoves Rented.*[1] | *Number of Heaters Rented.* | *Number of Engines Rented.* |
|---|---|---|---|
| Birmingham | 30,848 | .... | .... |
| Glasgow | 29,347 | .... | .... |
| Manchester | 23,862[2] | .... | .... |
| Leicester | 43,283 | 3,000 | .... |
| London-So. M. | 231,807 | 20,500 | .... |
| Newcastle | 43,256 | 459 | .... |
| Sheffield | 4,973 | .... | .... |

[1] These figures include cookers given with prepayment meters, except in Sheffield, where there are no prepayment meters in use.

[2] These are not rented but furnished free.

H 9. Appraisal of plant.[1]

| | *Birmingham.* | *Glasgow.* | *Manchester.* | *Leicester.* | *London-So. M.* | *Newcastle.* | *Sheffield.* |
|---|---|---|---|---|---|---|---|
| Land[2] ..... | £269,354 | £196,440 | £224,720 | £60,000 | £378,000 | £138,500 | £84,000 |
| Buildings ..... | 349,760 | 413,846 | 264,373 | 174,339 | 847,378 | 199,431 | 190,510 |
| Carburetted water gas plant..... | 134,600 | ..... | 83,590 | 39,500 | ..... | 19,840 | ..... |
| Coal gas manufacturing plant.... | 372,950 | 398,150 | 198,800 | 59,468 | 627,230 | 154,900 | 154,300 |
| Holders ..... | 473,693 | 582,595 | 377,100 | 170,600 | 434,085 | 232,002 | 274,000 |
| Other station equipment ..... | 220,027 | 202,250 | 139,302 | 58,750 | 211,918 | 73,137 | 84,177 |
| Chemical works.... | 2,000 | 92,504 | 20,000 | 35,000 | 53,000 | 12,000 | 15,000 |
| Mains ..... | 461,266 | 564,660 | 538,560 | 168,500 | 672,700 | 406,555 | 340,800 |
| Meters—consumers' | 365,663 | 345,579 | 258,407 | 128,000 | 587,462 | 140,084 | 149,203 |
| Services ..... | 68,665 | 155,171 | 121,732 | 40,400 | 234,985 | 50,959 | 81,269 |
| Underground wells, piping, paving, etc. ..... | 35,750 | 77,500 | 53,040 | 22,413 | 37,500 | 40,500 | 27,750 |
| Public lamps owned | ..... | ..... | ..... | ..... | ..... | 52,436 | ..... |
| Gas stoves and other appliances owned. | 9,600 | 88,041 | 71,586 | 30,000 | 715,921 | 131,145 | 14,919 |
| Miscellaneous[3] .... | 60,050 | 41,240 | 29,470 | 15,500 | 55,000 | 22,000 | 24,500 |
| | £2,823,378 | £3,157,976 | £2,380,680 | £1,002,470 | £4,855,179 | £1,673,489 | £1,440,428 |

[1] These figures must not be taken as strictly accurate, but approximately as correct as could be ascertained by superficial examination.

[2] Land valuations in general were exceedingly difficult to obtain and would have necessitated in many cases the spending of much time or employing local expert advice to determine them exactly. So in many cases the values given are from published accounts or as submitted by the general manager of the undertakings.

[3] Teams, tools, shop equipment, etc.

H 10. Give amount of gas made and amount sent out in M. cu. ft.

| *Towns.* | *Amount made.* | *Amount consumed* |
|---|---|---|
| Birmingham | 6,636,848 | 6,636,848 |
| Glasgow | 6,449,539 | 6,449,539 |
| Manchester | 5,008,544 | 5,008,544 |
| Leicester | 1,938,655 | 1,937,676 |
| London-So. M. | 12,859,712 | 12,859,712 |
| Newcastle | 3,254,383 | 3,254,383 |
| Sheffield | 2,936,137 | 2,933,820 |

H 11. Give amount of gas bought, sold to other gas undertakings and supplied free.

None in any instance.

H 12. Gas consumed during year in M. cu. ft.

| *Towns.* | *Gas sold for public lighting.* | *Gas sold to private consumers.* | *Gas used at works and offices.* | *Gas unaccounted for (leakage).* | *Total.* |
|---|---|---|---|---|---|
| Birmingham | 302,415 | 5,889,939 | 101,456 | 343,038 | 6,636,848 |
| Glasgow | 478,466 | 5,343,005 | 66,463 | 561,605 | 6,449,539 |
| Manchester | 398,493 | 4,382,017 | 83,813 | 144,221 | 5,008,544 |
| Leicester | 96,824 | 1,738,042 | 16,276 | 86,534 | 1,937,676 |
| London-So. M. | 409,312 | 11,733,411 | 151,670 | 565,319 | 12,859,712 |
| Newcastle | 224,626 | 2,663,178 | 39,371 | 327,208 | 3,254,383 |
| Sheffield | 195,955 | 2,600,942 | 33,941 | 102,982 | 2,933,820 |

The amount used for power was given in the following places: Birmingham, 968,703 M. cu. ft.; Manchester, 386,982; Leicester, 243,412; Sheffield, 228,607. In Manchester 350,000 were used for cooking and heating and 388,909 through prepayment meters.

H 13. Maximum and minimum output.

| *Towns* | *Daily capacity of plant, M. cu. ft.* | *Maximum day's output M. cu. ft.* | *Minimum day's output M. cu. ft.* |
|---|---|---|---|
| Birmingham | 43,250 | 37,057 | .... |
| Glasgow | 41,000 | 37,500 | 6,000 |
| Manchester | 25,400 | 26,819 | 5,028 |
| Leicester | 14,000 | 8,185 | 2,295 |
| London-So. M. | 66,000 | 53,581 | 19,199 |
| Newcastle | 16,500 | 15,505 | 4,043 |
| Sheffield | 18,000 | 14,764 | 2,616 |

H 14. Average consumption per annum, exclusive of public lighting.

| *Towns.* | *Population of areas of supply.* | *Cubic ft. per consumer (meter).*[1] | *Cubic ft. per capita.*[2] | *M. cu. ft. per mile of mains.*[3] |
|---|---|---|---|---|
| Birmingham ..... | 800,000 | 53,611 | 7,740 | 8,363 |
| Glasgow ..... | 1,000,000 | 22,446 | 5,821 | 6,468 |
| Manchester ..... | 750,000 | 28,798 | 6,374 | 5,570 |
| Leicester ..... | 250,000 | 32,226 | 7,339 | 7,296 |
| London-So. M..... | 1,500,000 | 39,946 | 8,095 | 10,450 |
| Newcastle ..... | 520,000 | 32,663 | 5,554 | 4,457 |
| Sheffield ..... | 470,000 | 31,747 | 5,951 | 5,192 |

H 15. Were consumers' meters removed and tested at regular intervals? How often?

*Birmingham, Glasgow, Manchester.* No; only removed when found defective, or at consumer's request.

*Leicester.* No; only on complaint or suspicion from six weeks' inspection.

*London-So. M.* No; tested only when brought in.

*Newcastle.* No; only removed when found defective or on consumer's request.

*Sheffield.* Dry meters have been tested every three years, one-third annually. Most of those in use are cast-iron wet meters with compensating water chamber and are not tested, as testing is not considered necessary so long as the water level is kept right and the meter is in working order.

H 16. If a consumer believed that the meter was fast, how might he have it tested?

In all cases, if the meter proved to be correct within certain narrow limits the consumer paid the testing fee; if incorrect the department or company paid the fee and rebated any overcharge.

*Birmingham.* By applying to the department. If the city test was not satisfactory the consumer might have a test made by the official meter tester.

*Glasgow.* By notice at office and payment of testing fee.

*Manchester.* By the gas department or by official tester.

*Leicester.* Consumer might complain and insist on meter being tested. The department tested or sent the meter to the government inspector at Nottingham; when test was made an official certificate was returned. Meters were sometimes tested in place by connecting them to six governed and tested burners. This was done on large meters when they were suspected of being wrong by the department.

[1] Divide the amount sold to consumers, given under H 12, by the number of meters, given under H 6.

[2] Divide the amount sold to consumers and for public lighting by the population of the areas of supply.

[3] Divide the amount sold to consumers and for public lighting by the number of miles of mains, given under H 5.

*London-So. M.* By the company, or on application to the London county council.

*Newcastle.* The company tested upon demand. If the consumer was not satisfied he might call in the city meter tester.

*Sheffield.* By giving notice to the company to discontinue the meter, the consumer might have it tested by the official specially appointed by the municipality to test meters.

H 17. Were there records of proofs of meters as removed?

*Birmingham, Glasgow, Manchester.* Yes; records of meter tests and certificates of official inspectors kept on file.

*Leicester.* Yes; records entered in a book in the shop and certificates of government inspector filed. No individual records of each meter were kept.

*London-So. M.* All these records were kept by the London county council, but the company kept the records of its own tests in books and card systems. The certificates issued by the testers of the London county council were also filed.

*Newcastle.* Yes; in detail. Records of all tests and of the city tester were kept by the company.

*Sheffield.* A record of all tests was kept, and the company can trace each individual meter. Statements were taken whenever a meter was seen. Official certificates were filed.

H 18. What means were being taken to extend use of gas to secure new consumers, and to instruct consumers in the use of cooking, heating and other appliances?

NOTE—In this connection, see data given under inquiries I 2-5.

*Birmingham.* No canvassers, but there was a display room in the main gas office, where instructions were given if desired.

*Glasgow.* No convassers, but there were several show rooms in different parts of the city, where instructions were given if desired.

*Manchester.* No canvassers, but a show room was maintained in the centre of the city, where instructions were given if desired. The department loaned stoves and meters to consumers free of cost and made no charge for fixing them. The work was done by a private contractor, and he was paid by the gas department. The fixing of meters by private contractors was unusual. In our opinion the arrangement was open to objection and the work should be done by the gas department's own employees.

*Leicester.* Three canvassers and a show room of stoves and fixtures, where instructions were given when appliances were purchased or rented. Printed instructions were also given on cards, and the stove inspector gave instructions on his rounds when requested or when sent for.

*London-So. M.* Canvassers, printed circulars and show rooms through the district, where consumers were taught to use appliances when purchased or rented.

*Newcastle.* Canvassers, advertising circulars, postal cards and a large exhibition for three weeks was held in 1902, and another in 1905. Instructions were given in show rooms, and young women gave demonstrations in various parts of the city. In special cases an experienced woman was sent to the consumer's house.

*Sheffield.* Canvassers, advertising, elaborate show room of appliances and stoves and cooking lectures. Inspectors called if desired. Stoves were generally sold and not rented.

H 19. Were cooking and other appliances carried in stock for sale or rent? (See also inquiries I. 2-5.)

*Birmingham.* Yes, cooking stoves in small quantities.

*Glasgow.* Yes, and placed at from 20 to 25 per cent. profit on cost plus fixing charges.

*Manchester.* Yes, for sale or loan, but no rent was charged.

*Leicester.* Yes, there was a good supply.

*London-So. M.* Yes.

*Newcastle.* Yes, for hire, hire-purchase or sale.

*Sheffield.* Yes, very complete.

## QUALITY OF GAS.

H 20. If atmospheric air was mixed with gas, state to what extent?

*Birmingham.* In small quantities for purification purposes.

*Glasgow, Manchester.* None.

*Leicester.* About 1 per cent. was admitted to foul mains, drawn in by exhauster and metered.

*London-So. M., Newcastle.* None.

*Sheffield.* About ½ to ¾ per cent. for purification purposes.

H 21. State fully the methods of testing candle power during the past year, giving place, time, frequency, distance from works, how published, etc.

*Birmingham.* The method was that adopted by the London gas referees in 1905. Gas was tested at the works at 9 A. M. and 4 P. M., at the official station in Sheep street, about one mile from the works, once daily at no stated time. Tests were entered daily in special books.

*Glasgow.* In addition to the test made by the works superintendent the gas examiner made tests at the manufacturing stations three times a week and reported to the municipality every fortnight, a copy of the report being sent to the engineer of the gas department.

*Manchester.* The chemist at each works tested three times a day but no test was made up-town. The chemists operated independently of the works managers.

*Leicester.* Tests were made at the works by the superintendents once each day and any time of the day. There was a

separate bar photometer for the water gas plant. Gas was also tested at the main gas office once each day by one of the office officials. This office was 1.4 miles from one works and .9 of a mile from the other. The candle power was read against a 2 c. p. Pentane lamp at the Aylestone works. At Belgrave Gate works candle-power was read against candles.

An office official, Mr. W. Pingreff, went to each works one day each week, no fixed day, to check work. The office records showed that candle power was not read regularly. Some Sundays were omitted, and from three to eight other days each month showed no readings. The record was kept in the Illuminating Book, but only the results were recorded. No details of calculations were given. Gas was burned in an Argand burner about six feet per hour, corrected to five feet.

*London-So. M.* There were six testing stations in different parts of the distribution system. Three tests were made at each station daily by the examiners appointed by the London county council. The farthest testing station was four miles from the works and the nearest one mile—average, 1.64 miles.

*Newcastle.* The c. p. was tested at each works against the candles, Pentane lamp and Methven screen, secondary standard. The city inspector tested c. p. with the photometer at each works. Records were sent to the city authorities and copies to the company. The reading was made weekly at any time.

*Sheffield.* Tests were made in the centre of the city at any time during day or night, about twelve times a month, by the official tester appointed by the city council. The maximum distance from the works was 1.25 miles. The c. p. was also read daily in the centre of the city by the company's chemists, and at each works by the superintendent, over 2,300 tests yearly. Candles were used at each test.

H 22. Summarize results of such examinations.

*Birmingham.* The average c. p. of the mixed gas for the year 1904-5 was 16.5 at the Saltley works, 16.16 at the Nechells works, 16.33 at the Windsor street works, 16.32 at the Swan Village works, 16.29 at the Adderley street works and 15.89 at the official station in Sheep street.

*Glasgow.* The average c. p. reported by the gas examiner for 1904-5 was 20.25 at the works, while the tests of the employees was 20.5 c. p. at the works.

*Manchester.* The average c. p. for the last five years, as given in the chemists' official report, was 18.97 for 1901, 18.54 for 1902, 18.25 for 1903, 17.80 for 1904 and 17.04 for 1905.

*Leicester.* The reports made to the engineer show that the average c. p. at the works during 1905 was 14.36.

The office records for 1905 were: January, 14.03; February, 14.14; March, 14.16; April, 14.15; May, 14.26; June, 14.30; July, 14.22; August, 14.17; September, 14.15; October, 14.04; Novem-

ber, 14.17; December, 14.10—average, 14.16. A reading was made by Mr. Klumpp at the office and candle power found to be about 13.4 upon March 21, 1906, at 5 P. M.

*London-So. M.* The average c. p. of over 6,000 readings for 1905 was 14.5.

*Newcastle.* The c. p. as officially tested averaged 16.18 for 1904 and 16.20 for 1905. The records showed no reading under 16 c. p.

*Sheffield.* The average c. p. of some 2,300 readings in 1895 was 18.00; 1896, 17.73; 1897, 17.77; 1898, 17.84; 1899, 17.50; 1900, 17.41; 2,119 tests in 1901, 17.34; 2,249 tests in 1902, 17.41; 2,268 tests in 1903, 17.37; 2,339 tests in 1904, 17.36; 2,314 tests in 1905, 17.37. The c. p. read by J. B. Klumpp at Lady's Bridge station with Chemist J. S. Sheard was 17.52 candles. The official test for 1905 was 17.08 c. p. at Lady's Bridge testing station.

H 23. Kind of photometer used and method of testing.

*Birmingham.* Table photometer; London gas referees' test.

*Glasgow.* Bar photometer with standard candles.

*Manchester.* Bar photometer, 10-candle Pentane standard.

*Leicester.* Bar photometer; 2 c. p. Pentane and candles.

*London-So. M.* Table photometers; London referees' instructions.

*Newcastle.* Bar photometer; candles by official; Pentane and Methven secondary.

*Sheffield.* Sugg Sethby bar photometer with candles and gas at five feet per hour.

H 24. What was the c. p. at the works as shown by the records?

| | |
|---|---|
| Birmingham | 16.32 |
| Glasgow | 18.17 |
| Manchester | 17.04 |
| Leicester | 14.36 |
| London-So. M. | 14.50 |
| Newcastle | 16.20 |
| Sheffield | 17.37 |

H 25. Did the candle power fluctuate?

*Birmingham.* Not materially, according to the engineer.

*Glasgow.* Slightly.

*Manchester.* Ran steadily. Was reinforced when necessary by carburetted water gas and benzol.

*Leicester.* Records generally read from 14 to 14.30.

*London-So. M.* No, according to the engineer.

*Newcastle.* Very little, according to the records.

*Sheffield.* Ran very steadily. Reinforced with benzol when necessary.

H 26. What was the average calorific value?

*Birmingham.* This return was not published.

*Glasgow.* Read occasionally and reported as about 650 B. T. U.

*Manchester.* From 600 to 650 B. T. U. gross. Readings were made daily with Junker's calorimeter at each works.

*Leicester.* From 560 to 580; average about 570. Readings were made daily at both works with Junker's calorimeter.

*London-So. M.* 595 B. T. U. gross.

*Newcastle.* Not given.

*Sheffield.* The average daily tests were about 600 B. T. U.

H 27. What was the average purity?

*Birmingham.* Free from sulphuretted hydrogen.

*Glasgow.* Amount of impurities within statutory requirements.

*Manchester.* Clean, purified with oxide.

*Leicester.* Clean as regards $H_2S$ and $NH_3$. No attempt to take out $CO_2$ or other sulphur compounds other than $H_2S$.

*London-So. M.* Clean under referee's tests.

*Newcastle.* Free from $CO_2$ and $H_2S$; 10 grains of $CS_2$.

*Sheffield.* Sulphuretted hydrogen, none; ammonia, about .20 grains and $CO_2$ about 1 per cent.

H 28. How was it tested for purity?

*Birmingham.* For sulphuretted hydrogen—the only test required by the Act of Parliament.

*Glasgow.* Gas supplied free of $H_2S$. No official test.

*Manchester.* London referees' test.

*Leicester.* Tested for $H_2S$ and $NH_3$ continually at laboratory and engine room; at outlet of purifiers for $H_2S$; for naphthaline, with picric acid continually at both works.

*London-So. M.* Referees' tests.

*Newcastle.* Regular Parliamentary tests for sulphur compounds.

*Sheffield.* Continuously with lead acetate paper and tumeric paper by official in photometer room at centre of town; also continuously at works office, and for $H_2S$ at outlet of purifiers.

H 29. Did the plant employ a chemist and own a chemical laboratory?

*Birmingham.* A chief chemist and twelve assistant chemists were employed by the several laboratories. These chemical laboratories are very complete.

*Glasgow, Manchester, Leicester.* At each works there was a laboratory and chemist.

*London-So. M., Newcastle.* There was a chemist and a laboratory at each works.

*Sheffield.* One chief chemist and four assistants; one main laboratory and a working laboratory at each works.

H 30. Was there any record of any analyses of materials?

All works had complete records of all analyses.

H 31. Were any engineering tests or experiments being carried on?

*Birmingham.* Yes, distillation and coke conveying tests.

*Glasgow.* Yes, including records of coal testing.

*Manchester.* Yes, coal distillation tests in model gas works at Bradford Road.

*Leicester.* Yes, coal distillation tests. Plant was complete but on a rather small scale; .001 of a ton was used in each charge.

*Companies.* Continued coal distillation tests.

## PRESSURE.

H 32. State how pressure was measured and recorded.

*Birmingham.* Pressures were taken at fifteen governor outlets by recording gauges, and at three offices, one in town, one at Sutton and one at Wednesbury. Gauges were also located regularly at the lowest pressure point during the time of maximum consumption.

*Glasgow.* By recording pressure registers at the works in each governor outlet, and in various parts of the city by portable gauges when it is desired to find the pressures.

*Manchester.* By recording gauges on all station governors; periodical tests were made by means of portable recording registers.

*Leicester.* By recording gauges in governor houses and uptown office—not changed on Sunday. Pressures taken about town to locate low pressure.

*London-So. M.* By recording gauges on outlets of governors and by portable gauges in different parts of district, taken out by inspectors at time of maximum consumption.

*Newcastle.* By recording gauges on every governor outlet—thirteen governors, viz., nine at Central governor station, one at Redheugh, two in town and one at St. Anthony—and by fourteen portable gauges which take pressures all over at time of maximum consumption.

*Sheffield.* With pressure recording gauges at outlet of each works governor, at district governor and central office; inlet and outlet pressures taken. As the city is very hilly differences of nearly 700′ occur within the district supplied. A most admirable system of pressure was maintained. There were seven governors at the three works supplying different districts, besides six district governors about the city separating the distribution system in different elevations. These governors were supplied by a high pressure main connecting all works, which may be used as a pumping main between works. Recording gauges were on inlet and outlet of governors.

H 33. Summarize records for past year.

*Birmingham.* Engineer stated that pressure was generally satisfactory.

*Glasgow.* In the trunk mains the pressure varied from 74 to 18 tenths. There were both daily and yearly variations. Pressure was greatest at 10 P. M. and least at 3 P. M.

*Manchester.* Engineer stated that pressure was ample.

*Leicester.* The records were not seen, but the engineer stated that pressure was maintained at the office 30 tenths at night, 20 tenths in the day and about 15 tenths from midnight till morning. High pressure mains to outlying districts were kept from 50 to 60 tenths by a DeLaval-Pusher turbine on Sturtevant blower.

*London-So. M.* Engineer stated that pressure was generally satisfactory.

*Newcastle.* Records for the past year show that all districts had sufficient pressure maintained at about 20 tenths on consumers' mains. There were very few consumers on trunk or pumping mains, and they had individual governors.

*Sheffield.* General pressure book was examined; pressure satisfactory. Entries were made daily from the recording gauge charts, showing pressures at all the principal hours of the day. The pressure may be ascertained for any hour or place in the entire city for the past year.

H 34. Were pressures fairly uniform?

*Birmingham.* Said to be reasonably uniform, and from the records seen this was apparently so.

*Glasgow, Manchester.* Yes, according to the engineer.

*Leicester.* The charts seen were uniform.

*London-So. M., Sheffield.* Yes, according to the engineer.

*Newcastle.* They were well maintained.

H 35. Pressure recorded for the past year in tenths of an inch.

The following table gives the pressure readings at various points in the different systems, some at the works, some on trunk mains and others at extreme ends of the system.

| *Towns.* | *Highest.* | *Lowest.* | *Difference between day and night.* | *Average at Works.* | *Average at Consumer's meter.* |
|---|---|---|---|---|---|
| Birmingham ..... | 42 | 6 | 8-20 | 10-50[1] | 15-20 |
| Glasgow ..... | 74[2] | 18 | Note[3] | (?) | 15-20 |
| Manchester..... | 40 | 12 | 15 | 20-40 | 15-20 |
| Leicester ..... | (?) | (?) | 15 | about 30 | 20-30 |
| London-So. M..... | 50 | 18 | 20 | 45 | 25 |
| Newcastle ..... | 55[4] | 25 | (?) | 30-50 | 20-30 |
| Sheffield ..... | 54 | 13 | 15-30[5] | about 22 | about 20 |

[1] Rather difficult to answer.
[2] Trunk mains.
[3] Night sometimes double the day.
[4] At works.
[5] At governors.

H 36. Were complaints numerous as to pressure?

The engineer of each plant stated that there were no complaints about pressure.

H 37. Were there complaints about interruption of service?

The engineer of each plant stated that there were none. The engineer of Birmingham reported some due to naphthalene.

H 38. Has the gas supply ever been cut off from the city? Describe instances.

*Birmingham, Glasgow, Leicester.* Never, according to the engineer of each plant.

*Manchester.* The gas supply has never been cut off from the city, but during December, 1904, when there was a week of heavy fog, when pressure was reduced and some sections of street lamps were not lighted.

*London-So. M.* The Woolwich district was once in darkness due to closing of a valve by mistake.

*Newcastle.* Never, according to the engineer.

*Sheffield.* Supply was once partly cut off in certain districts. A man once closed all gas holder outlets at one works. The company has now installed safety governors that automatically throw on pressure through separate inlets when pressure falls below certain points.

## EXTENSIONS.

H 39. What factors have determined the extent and location of extensions?

*Birmingham, Glasgow.* Demand.

*Manchester, Leicester.* Commercial reasons.

*London-So. M* Public demand.

*Newcastle.* Commercial reasons and business in view and lamps ordered by the city.

*Sheffield* Judgment of manager and engineer, supported by the board of directors on large improvements.

H 40. Was the built-up area well served, so that all citizens might use the service?

*Birmingham.* Yes; only very few sections were not supplied.

*Glasgow.* Yes; apparently all districts were served.

*Manchester.* Yes, according to the superintendent.

*Leicester.* Yes; gas mains are in practically every street.

*London-So. M., Newcastle.* Yes, according to the engineer.

*Sheffield.* Yes, judging from the maps and main records.

H 41. Has the policy in respect to extensions been liberal?

*Birmingham, Glasgow, Manchester.* Yes, according to persons in charge.

*Leicester.* Very.

*London-So. M., Newcastle.* Yes, according to the engineer.
*Sheffield.* Yes; apparently very liberal.

H 42. Total length of extensions during the past year.

| | |
|---|---|
| Birmingham | 21.9 miles |
| Glasgow | 30.25 " |
| Manchester | 15.2 " |
| Leicester | 7.5 " |
| London-So. M. | 30 " |
| Newcastle | 34 " |
| Sheffield | 10.04 " |

H 43. Have the citizens of any section petitioned for extension to their district within the last five years?

*Birmingham.* No; the department always tried to anticipate requirements.

*Glasgow.* People dwelling in isolated districts within the area of supply have petitioned.

*Manchester.* The city extended its boundaries, taking in a district supplied by the Stretford Gas Company, whose rights in that district the city purchased on petition and by agreement.

*Leicester.* Not in the borough, but outlying districts have petitioned and many are being supplied.

*London-So. M.* No, according to the engineer.

*Newcastle.* In outlying districts only.

*Sheffield.* No important instances.

H 44. As between several sections petitioning at one time, how were extensions determined, and in what order?

*Birmingham, Glasgow, Manchester.* No such situation has arisen.

*Leicester.* In order of receipt, according to the engineer.

*London-So. M.* This has never occurred, but if it did the engineer says that the extensions would proceed simultaneously.

*Newcastle, Sheffield.* Such a condition has never occurred.

H 45. Were extensions made promptly when there was a demand?

*Birmingham, Manchester, Leicester.* Yes, according to officials.

*Glasgow.* Yes, if inside area of supply and near mains.

*London-So. M., Sheffield.* Yes, according to company officials.

*Newcastle.* Especially in recent years when there has been heavy electric competition.

H 46. Was every applicant for service able to get it promptly?

*Birmingham.* Yes, within ten days if a gas main was in the street.

*Glasgow, Manchester, Leicester.* Yes, according to officials.

*Companies.* Yes, according to engineers.

H 47. Has the necessity for passage of an ordinance ever caused delay in extending the service?

No such instances could be found in any case.

H 48. Has service been extended in advance of the demand in order to stimulate the growth of a district, or has it awaited demand?

*Birmingham.* Both, according to the secretary of department.

*Glasgow, Manchester.* It has awaited demand.

*Leicester.* It has awaited demand, but a supply has generally been given soon after houses were built.

*London-So. M.* Service has been extended in advance in some cases, according to the engineer.

*Newcastle.* Many times; extensions have anticipated demand in order to secure business.

*Sheffield.* It has awaited demand—the general practice in England.

H 49. Was the department free to use its judgment about extensions, or was an ordinance required authorizing the extensions?

The officers of the department or the company may exercise their own judgment as long as they keep within the area of supply authorized by Parliament.

H 50. May service be extended to suburban sections not within the city limits?

*Municipalities.* Service may be extended to any portion of the area of supply, which includes in each instance areas beyond the city limits. In Manchester and Leicester extensions have been made beyond the area of supply, and Parliamentary authority has been obtained later. In no case has it been refused.

*London-So. M.* The company's area is defined by Act of Parliament, but there is nothing to stop it from extending its operations outside the defined area provided it does not enter another company's area, and in such case it would simply be in the position of a non-statutory company and without the protection of the general acts.

*Newcastle, Sheffield.* Service may be extended anywhere within the area authorized by Act of Parliament.

## STREET WORK.

H 51. Was street work done by direct employment or contract?

*Birmingham.* By contract; material was purchased by the city but the work was done by private contractors.

*Glasgow.* Both.

*Manchester, Leicester.* Direct employment.

*Companies.* Direct employment.

H 52. Was the work done by contract properly inspected?

*Birmingham, Glasgow.* Yes, according to officials.

*Manchester, Leicester.* No contracts.

*Companies.* No contracts.

H 53. Was the work performed in an efficient manner?

Yes, in each instance, according to persons in charge.

H 54. Was the street service promptly restored after openings were made?

*Birmingham, Manchester.* Yes, according to officials.

*Glasgow.* Yes, temporarily, then permanently by paving department.

*Leicester.* Yes, by the street paving department, upon notice.

*London-So. M., Sheffield.* Yes, according to the engineers.

*Newcastle.* Yes, by the company temporarily, and ultimately by the city, and charged to the company.

H 55. Was water used in puddling ditches?

*Municipalities.* Occasionally, according to the soil.

*London-So. M.* Occasionally, according to the engineer.

*Newcastle, Sheffield.* No.

H 56. Were open trenches and obstructions properly guarded?

*Municipalities.* Yes, according to department officials.

*London-So. M., Newcastle.* Yes, according to company officials.

*Sheffield.* Yes; a watchman guards them all night.

H 57. How were sunken trenches taken care of?

*Birmingham.* They were regularly watched and repaired, and charged to gas department, according to engineer.

*Glasgow.* They were properly fenced at night, lamps lighted and watchman placed on guard. Repairs were made by the street department and charged to the gas department.

*Manchester.* The Highway Committee repaired and charged to the gas department.

*Leicester.* They were inspected and repaired at once. The engineer said that particular attention was paid to repairing and guarding all dangerous places.

*London-So. M.* Within the time limit, the company was responsible for necessary repairs, and afterwards the local authorities.

*Newcastle.* City made repairs and charged to the gas company inside of twelve months.

*Sheffield.* They were kept in repair by the company for twelve months.

H 58. What has been the policy in regard to improving the condition of street services prior to street paving or repaving?

*Birmingham.* Mains were overhauled and renewed when necessary prior to a street being paved or repaved.

*Glasgow.* If required, the mains were enlarged and altered or repaired before street paving.

*Manchester.* If notice is given that a street is to be paved, mains and services are overhauled.

*Leicester.* The general policy was to wait until houses were erected, if streets were paved ahead of house erection.

*London-So. M.* The borough engineer gave notice of street repairing and the company looked to their mains and services.

*Newcastle.* Repairs were made invariably ahead of street paving. The city engineer reported ahead of work.

*Sheffield.* The company always took the opportunity to carry out any repairs or enlargements prior to street repairs.

H 59. Was there an up-to-date map showing the location and nature of all street mains and fixtures?

*Birmingham.* Yes; two maps—small and large sectional scale.

*Glasgow, Manchester.* Yes; maps and records of street mains were at the municipal offices.

*Leicester.* Yes; there was a large sectional map showing mains and houses.

*London-So. M.* Yes.

*Newcastle.* Yes, being completed. All records are correct for the last seven years.

*Sheffield.* Yes; large maps on large scale and complete individual sketches.

H 60. Who decided where underground structures shall be located in the street?

*Birmingham.* The engineer of the gas department in conference with the city or local surveyors.

*Glasgow, Manchester, Leicester.* Officials of the department.

*London-So. M.* By agreement with the borough engineers, with right of appeal to the Board of Trade.

*Newcastle.* Plans were submitted to the city engineer for approval. He must approve within three days or give alternate decision. Justices of the peace decide disputes.

*Sheffield.* The officials of the company. The mains are always laid under the foot-paths.

H 61. Was a permit from a public authority required before street might be opened?

H 62. Was a separate permit obtained for each opening?

*Municipalities.* No permit was necessary, but notice was given for each opening.

*Companies.* Yes.

## PURCHASE OF SUPPLIES.

H 63. Who placed the orders for materials, and who governed the placing of orders?

*Birmingham.* The gas committee of the city council.

*Glasgow.* The general manager, under the gas committee.

*Manchester.* Orders were placed before the gas committee each month and signed by the chairman; urgent orders were placed by the engineer.

*Leicester.* The engineer bought after test and inspection, and orders were confirmed by the gas committee.

*London-So. M.* The board of directors in conjunction with the engineer and secretary.

*Newcastle.* The engineer and secretary, but directors settled large contracts.

*Sheffield.* General manager.

H 64. Were contracts advertised?

*Municipalities.* Yes.

*Companies.* No.

H 65. What system was used to check the quality of materials and weights or measurements of shipments?

Quality, weights and measurements of all materials were inspected and checked by the engineers and storekeepers.

H 66. What redress was there in cases of shortages or poor quality of shipments?

Material might be rejected and credit claimed.

H 67. Were the dealers supplying material connected with the city, county or State government?

*Birmingham.* Members of the municipal authorities may not supply goods or materials direct, but may be interested in limited companies supplying same.

*Glasgow.* No member of the municipal corporation may execute municipal contracts.

*Manchester.* One case came under our notice.

*Leicester.* No.

*London-So. M.* The engineer has no idea.

*Newcastle, Sheffield.* No.

H 68. Were local dealers favored over those outside of the city?

*Birmingham, Manchester, Leicester.* All things being equal, yes.

*Glasgow.* No.

*London-So. M.* No.

*Newcastle.* All things being equal, consumers were favored.

*Sheffield.* Yes, all things being equal, or only small differences.

H 69. Was there delay in placing orders after the engineer or superintendent expressed the necessity for the supplies?

No, according to the officials of each undertaking.

H 70. In practice, did the manager get the types and makes of things he asked for, or was he forced to take something else?

The official of each plant reported that he got what he wanted.

H 71. Were bills for materials purchased paid promptly?

*Birmingham, Glasgow, Manchester.* Yes, monthly.

*Leicester.* Bills were paid thirty days after the month received.

*London-So. M., Newcastle.* Yes, monthly.

*Sheffield.* Yes, upon the 12th of the following month after the bill was incurred.

## GENERAL MATTERS.

H 72. Was the plant adequately equipped to handle the business?

*Municipalities.* Yes.

*London-So. M.* Yes.

*Newcastle.* Yes, although plans are being made to remodel the Elswich works, unless the property is purchased.

*Sheffield.* Yes; the gas storage capacity was large.

H 73. Was the equipment of modern and efficient type?

*Birmingham.* The three largest and newest works were quite modern and efficient. The Adderley street plant was somewhat antiquated.

*Glasgow.* Yes; the newest sections were very modern and efficient.

*Manchester.* Yes, generally; the Rochdale Road works were rather crowded, but improvements were under way.

*Leicester.* The Aylestone works were modern; have coal gas and water gas plants and were efficient, although all hand firing. The Belgrave Gate works were rather old.

*London-So. M.* East Greenwich, yes; Old Kent Road, in part; Vauxhall, fair; Rotherhithe, fair; Bankside, fair; West Greenwich, fair.

*Newcastle.* The Redheugh works, yes; Elswich retorts were efficient but cannot be considered modern.

*Sheffield.* Modern at Grimesthorpe and Neepsend works; exceedingly efficient automatic machinery in use. Effingham street had hand firing.

H 74. Was it in good condition?

*Birmingham, Glasgow, Manchester.* Yes.

*Leicester.* The Aylestone works were in very good condition, neat and well laid out. The Belgrave Gate works were rather cramped and old, but in neat condition.

*London-So. M.* Yes.

*Newcastle.* Redheugh, yes; Elswich, partially.

*Sheffield.* Yes; all plants were in good condition, but Neepsend works rather crowded.

H 75. Will it be necessary to make extensive repairs or alterations in the near future?

*Birmingham.* No.

*Glasgow.* No; one of the large plants was standing idle.

*Manchester.* No; the Bradford Road works will be increased as consumption increases. A large new holder was contemplated.

*Leicester.* It was thought that new works would have to be started in about three years, but as there was a decrease in last year's sales the present plant will probably run five or six years without further extensions.

*London-So. M.* Extensive repairs were going on; no considerable works extensions were entertained. The East Greenwich works are designed to provide them when they are necessary.

*Newcastle.* Yes, Elswich in 1907; or, if not, St. Anthony works may be started soon.

*Sheffield.* Not in the immediate future. The lay-out provides for extension of five millions daily. Much work is already planned.

H 76. Was the plant kept in neat and clean condition?

*Birmingham, Glasgow, Manchester.* Yes.

*Leicester.* It is exceedingly neat and clean. The plant is continually being brushed by a cleaning gang to extravagance.

*Companies.* Yes.

H 77. Were the works adequately ventilated?

Yes, in each instance.

H 78. Were the pits, shafts and machinery properly guarded?

Yes, in each instance.

H 79. Were the offices for payments, complaints and other business conveniently located?

*Birmingham.* One central office was in town, one at Sutton and one at Wednesbury. There were seventeen branch collecting offices in chemists' and drug stores, where consumers might make payments one month after they were due. These druggists collected on a commission.

*Glasgow, Manchester, Leicester.* One office in centre of city.

*London-So. M.* Offices were scattered over entire district.

*Newcastle.* One office in centre of city and branch in Gateshead.

*Sheffield.* One main office in centre of city.

H 80. Were consumers' complaints promptly and efficiently attended to?

Yes, according to the officials of each undertaking.

H 81. Describe office system of handling complaints.

*Birmingham.* Complaints were received at the central office, where an order was sent to the fitting department, a carbon copy being kept at the central office. The fitting department looked after the work, filled up blank forms of cost and time, with details as to what the job consisted of, which was returned to the central office, and charges were made accordingly. There was no shop uptown. The work outside of the meter was done free; inside the meter it was charged for at a profit.

*Glasgow.* Complaints were made at the central office, sent to the shop on regular forms, entered in books, attended to, entered again and returned to central office. Shop records were in good shape; office records were filed rather badly.

*Manchester.* Complaints were entered in a stub book and slips were sent to the fitting department. After the complaint had been attended to the slip was returned to the complaint desk, with the nature of the complaint and the work done recorded with the fitter's name. Escapes were not separated from orders.

*Leicester.* Complaints were recorded in office book and slip was sent to fitters' shop. Fitters got orders from the foreman in charge or clerk at desk in fitters' shop. Men were sent out from the shop with a statement of the nature of the complaint. When the work was done they returned, reported and initialed the place in the book or slip opposite the order.

*London-So. M.* Complaints were received at the desk by telephone, post or call; entered in a book, with the nature of the complaint, and the time was copied into the inspection book, which was taken by the inspector. The latter attended to and made an entry of the nature of the complaint and the result of inspection. The book was then returned to the complaint desk and copied into the original book, two small books going to each inspector. The district of inspection was laid out with a head inspector, an assistant and group of ordinary inspectors. Complaints of special nature were inspected by the head inspector or assistant.

*Newcastle.* Complaints came to the central office. Sheets were sent continually to the fitters' department by messenger; urgent ones were telephoned and followed by a sheet. Time was marked, checked and booked at fitters' department. The fitters best suited for the work were sent out, the time going and returning being marked and the work done entered on order. It was then received by a clerk in the fitters' department, entered and returned to the central office. One clerk had this in charge at the central office, and if report was not satisfactory to him he sent another inspector out.

*Sheffield.* Complaints were entered in stub books—one book for meters set, one for orders, stoves and fixtures; one (printed in

red) for leaks, etc. The time of day was marked on each book, slip detached and sent at once to fitting department and order given out for leaks at once. When work was finished slips were noted by fitter, checked by clerk, time and nature of complaint was entered, with charges to stores and cost figured on each job. The system was very complete and capable of being checked in all details. Slips were pasted on filing books.

H 82. How were leak complaints attended to at night?

*Birmingham.* Men remained at the office until 12 o'clock, and an emergency man might be called after that.

*Glasgow, Manchester.* Fitters were on duty to attend to any calls.

*Leicester.* A man was on duty at the office at night and could get a fitter by telephone if needed.

*London-So. M.* Men were on duty to attend to complaints.

*Newcastle.* An emergency man was on duty all night, ready to attend to leaks, fires, etc. He could get help instantly from various quarters.

*Sheffield.* A man was on duty until 10 P. M.; then two men who lived adjacent to the main office could be gotten at once by the watchman at the office.

H 83. Was there a system of badging or uniforming the employees so that they might be known to the public?

*Birmingham.* Every man dealing with the public wore a uniform badged cap.

*Glasgow.* Meter testers and night men had uniform cap.

*Manchester.* Yes.

*Leicester.* Meter and store inspectors were uniformed and badged; fitters and laborers were not.

*London-So. M., Newcastle.* Yes.

*Sheffield.* No; each inspector and meter reader carried a small official book which identified him.

H 84. Were the general morale and discipline of the employees good, bad or indifferent?

Good, according to the manager or engineer of each plant.

H 85. Were the employees who meet the public polite and attentive?

Yes, according to the manager or engineer of each plant.

H 86. Were they neatly dressed?

Apparently.

H 87. Did the various departments work in harmony? Was there friction or jealousy, and did one department shirk work, leaving it to be done by another?

*Birmingham, Manchester.* No answer.

*Glasgow.* The various departments were said to work in harmony.

*Leicester.* Engineer said that it was one particular point to see that all departments worked in harmony.

*London-So. M.* The engineer said that departments work in harmony, that there was no more jealousy than in any large undertaking and that no department shirked its work.

*Newcastle.* The secretary said there was no friction.

*Sheffield.* The manager said that there was perfect harmony, and that particular attention had been paid to this feature.

H 88. Was there an adequate system of telephones?

Yes; public and private.

H 89. Were the works and offices properly watched at night?

Yes, in each instance.

H 90. Were employees generally permitted to run to fires, or was some one appointed to go?

*Birmingham.* A special "gas stopper" was detailed with the firemen.

*Glasgow.* One employee was in constant attendance at the fire department headquarters.

*Manchester.* Men were appointed for the purpose.

*Leicester.* Yes; a bonus of one crown was given to an employee shutting off gas.

*London-So. M.* No, there were no special men.

*Newcastle.* Special men were assigned, with power to call others.

*Sheffield.* Men were specially appointed, day and night.

H 91. Was there any system of inspection to prevent workmen of other companies or city departments from injuring the underground structures?

*Birmingham, Manchester, Leicester.* Yes; the main inspectors watch the operations of others.

*Glasgow.* The gas department is notified of all openings to be made.

*London-So. M., Newcastle.* Yes; a general inspection of openings.

*Sheffield.* Yes, there were two men to specially inspect all foreign work.

H 92. Has the manager maintained an adequate system of reports made to him of the details of the operation of the plant day by day, so as to show manufacturing results, cost per unit, length of underground or overhead structures installed, etc.?

*Birmingham, Manchester.* Yes; daily and weekly reports.

*Glasgow.* Yes.

*Leicester.* Weekly reports were sent to the engineer.

*London-So. M.* Yes.

*Newcastle.* Yes, fortnightly reports were submitted to the board of directors, and daily reports to the engineer, including all readings of temperatures and pressure.

*Sheffield.* Complete reports of daily results of plant, pressure, candle-power, etc., were made. Everything was systematic and easily accessible.

H 93. Was there a drafting room maintained?

Yes; in each instance.

H 94. What system was in vogue to take care of the tools distributed to employees?

*Birmingham, Glasgow, Leicester.* All tools were booked in and out, and employees were required to account for them individually.

*Manchester.* Every foreman was responsible for tools used by his gang.

*London-So. M., Newcastle, Sheffield.* Booked in and out to all employees. All men had to account for them individually.

H 95. Were the different classes of workmen equipped with proper tools? Were the tools kept in order?

It was so stated in each instance, and all that were seen were in good order.

H 96. With what promptness were orders to turn on gas attended to?

*Birmingham, Glasgow.* All received up to 4 P. M., if important, were attended to the same day.

*Manchester.* Promptly, according to the superintendent.

*Leicester.* Very promptly, according to the superintendent. Meters were set about two days after orders were received, and in order of receipt, except on urgent appeal.

*London-So. M.* Within twenty-four hours, or, if urgent, within one hour, according to the engineer.

*Newcastle.* Promptly. Electric competition is very keen, and the gas company is making every effort to give the best service.

*Sheffield.* At once. Inspection of complaint and order book showed that all matters were followed up quickly.

H 97. Are service pipes run to every lot, whether built upon or not, prior to street paving or repaving? If so, how many of these dead services are now in existence?

*Municipalities.* Service pipes are run only when service is required.

*London-So. M.* There are no dead services in existence, according to the engineer.

*Newcastle.* This has been done, but it is not the general practice.

*Sheffield.* No services are laid until required by tenants.

H 98. Were records kept of services by date installed so that as the service grows old an inspection may be made at intervals of years to determine when renewals should take place and insure such renewal before most of the services have begun to give trouble?

*Birmingham.* Yes; according to the secretary.

*Glasgow.* A record was kept of the services, but not seen.

*Manchester, Leicester.* No.

*London-So. M.* All services were kept on record, according to the engineer.

*Newcastle.* Yes, for the last seven years. Records previous to that time were incomplete.

*Sheffield.* Yes; every service record was complete and every one over 2 inches in diameter was on street main map.

H 99. Were there any regulations in force regarding the entrance of employees in houses?

*Birmingham.* No, except with prepayment meters.

*Manchester, Glasgow, Leicester.* No; except general instructions.

*Companies.* No printed regulations; only general orders.

H 100. Did anyone inspect the work done by employees in consumers' houses?

*Birmingham.* Yes.

*Glasgow, Manchester.* Yes; examined by foreman or inspector.

*Leicester.* No; not generally, but in some cases.

*London-So., M.* They were inspected by the foreman and superintendent of the fitting department.

*Newcastle.* Yes.

*Sheffield.* The foreman followed the work and made inspection.

H 101. Was this inspection special, or did it include every job?

*Birmingham.* General.

*Glasgow.* Only where new material had been used.

*Manchester.* Every job was inspected.

*Leicester.* Special inspection only.

*London-So. M.* Special inspections which did not cover every job.

*Newcastle, Sheffield.* Yes; every job was inspected.

# FINANCIAL MATTERS

## British Gas Works

## (Schedule IV)

By E. HARTLEY TURNER and R. C. JAMES.*

I 1. Data for year ending: Birmingham, March 31, 1905; Glasgow, May 31, 1905; Manchester, March 31, 1905; Leicester, December 31, 1905; Companies, December 31, 1905.

I 2. Give price of gas per M. cu. ft. for various purposes.

I 3. Give discounts allowed.

I 4. Give meter rents and charges for repairs, if any.

I 5. Give stove rents and charges.

I 2-5. (For answers to inquiries see opposite page. Notes to table opposite are to be found upon pages 210-212.)

*All figures in these schedules relating to assets and liabilities, revenue, and profit and loss account, are prepared from the published accounts certified by the auditors. We have in all cases where further information was required obtained such details from the staff of the undertaking.

We have not in any case verified by personal examination the accuracy of the audited accounts, as we considered that in the short time at our disposal we should not have been able to do this with any completeness even had we entré to the books and original records.

For general comments and summary, see further report at the end of this volume.

| Towns. | Lighting and Heating. | Power. | By Prepayment. Meters. | Public Lighting[1]. | Discounts. | Meter Rents. | Charges for Fixing Meters. | Stove Rents. | Charges for Fixing. |
|---|---|---|---|---|---|---|---|---|---|
| ***Birmingham:*** | | | | | | | | | |
| **Per quarter[2]** | | | | | | | | | |
| Under 50,000 cu. ft.. | 2/6 | 2/6 | 2/8[14] | 1/0 | 5% for prompt payment. | None charged | 3/6 to 7/6 for ordinary meters[3] | (7) | (7) |
| 50,000—250,000 ... | 2/3 | 2/3 | | | | | | | |
| 250,000—1,000,000 . | 2/0 | 2/0 | | | | | | | |
| 1,000,000 and over... | 1/10 | 1/10 | | | | | | | |
| ***Glasgow:*** | | | | | | | | | |
| City and suburbs.. | 2/1 | 2/0 | 2/6 | 2/1 | None. | None charged | No charges | Usual charges Free with prepaym't meters | No charges |
| Milngavie ..... | 3/1 | 3/0 | 3/6 | 3/1 | | | | | |
| ***Manchester:*** | | | | | | | | | |
| Within the city.... | 2/4 | 2/0 | 2/9 | 2/4 | None. | None charged | No charges | Furnished free | No charges |
| Without the city.. | 2/7 | 2/3 | 3/4 | 2/7 | | | | | |
| ***Leicester:*** | | | | | | | | | |
| Within the city... | 2/4 | 1/6 | 2/9⅓ | 2/2 | None. | None charged | 4/6 for 5 lt. to 16/6 for 20 lt. for ordinary meters | Furnished free with prepayment meters, others charged[9] | None with prepayment meters[10] |
| Oadby district..... | 2/8 | 1/10 | 3/1 | 2/8 | | | | | |
| Anstey district.... | 3/0 | 2/2 | 3/6 | 3/0 | | | | | |
| ***London—So. M.....*** | 2/0 | 2/0 | 2/9 | (8) | Per annum[8]<br>£100—£500, 3%<br>£500—£1,000, 4%<br>£1,000 and over, 5%. | 9d. per quarter for 3 lt. meter, up[11] | No charges | Free with prepayment meters, others charged[13] | None for prepayment meters; others, cost[13] |
| ***Newcastle:*** | | | | | | | | | |
| Within the city.... | 2/0 | 2/0 | 2/10½ | 2/0 | Per quarter[4]<br>Under 100,000 cu. ft., 10%<br>100,000—250,000, 12½%<br>250,000—400,000, 15%<br>400,000—1,000,000, 17½%<br>1 to 40 millions, 20%<br>40 to 80 millions, 22½%<br>Over 80 millions, 25% | 9d. per quarter for 3 lt. meter, up[14] | No charges | 1/10—5/5 per quarter<br>Free with prepayment meters | No charges |
| Without the city.. | 2/0—3/5 | 2/0—3/5 | 2/0—3/5 | 2/0—3/5 | | | | | |
| ***Sheffield:*** | | | | | | | | | |
| **Per annum[4]** | | | | | | | | | |
| Under 500,000 cu. ft. | 1/8—1/6 | 1/4—1/2 | None | 1/4—1/2 | None | 2/8 per year for 2 lt. meter, up[15] | No charges | 1/6—4/6 per quarter | (15) |
| 500,000—6,000,000 . | 1/6—1/4 | | | | | | | | |
| 6,000,000 and over... | 1/4—1/2 | | | | | | | | |

[1] These prices include merely the gas furnished; they do not cover repairs, maintenance, lighting or use of posts or burners, except at Newcastle, where the company owns the posts and burners, and except at London as stated in note (5). With the exception of Birmingham and London, no undertaking is required to bear the cost of repairs and cleaning. Birmingham spent £3,295 last year for lighting and repairing.

[2] The scale of consumption is computed per quarter and for each building; thus in order to get the rate of 1s. 10d., the consumer must use at least 1,000,000 cubic feet in one building in the quarter. This arrangement is slightly more favorable to him than a scale for a yearly consumption with the items made four times as large.

[3] Prices vary from £2 9s. 2d., for a small-sized burner, to £3 4s. 5d., for a large-sized burner, per annum for a Kern incandescent burner, including cleaning, maintenance and repairs as well as the gas furnished. The local authorities own lamps and burners and must light and extinguish them.

[4] Upon April 1st, a reduction of 2d. per M. cu. ft. was made. The first figures in each column were in force prior to that date, the last were after.

[5] A consumer having a number of small shops in the district, the total consumption of which exceeds £100 per annum, got 2½ per cent off. All public bodies and local authorities got a discount of 5 per cent on all gas consumed. All discounts were allowed only on bills paid within a month of quarter day.

[6] The company allowed an extra discount of 2½ per cent on gas used for public lighting in Newcastle and Gateshead, conditionally upon the lamps burning every night throughout the year. The above discounts have been in force since January 1, 1905. Under the Act of 1901, two rates of discount were prescribed, viz., 10 and 15 per cent. The company allows to large consumers a higher rate than allowed by the act which does not differentiate above 400,000 cu. ft.

[7] If a prepayment meter was used, it was rented and fixed free, and cookers and fittings were also supplied free to cottages let on weekly tenancies. Heating and cooking stoves were supplied upon these terms:

| *No. of Stove.* | *Sale Price Subject to Cash Discount of Five per cent.* | *Quartely Hire Payment (net) on Three Years' System.* |
|---|---|---|
| | £ s. d. | £ s. d. |
| 2273B—Cannon Iron Foundries, Limited.... | 3 18 0 | 0 6 6 |
| 2274B— " " " " .... | 4 10 0 | 0 7 6 |
| 2275B— " " " " .... | 5 2 0 | 0 8 6 |
| 2276B— " " " " .... | 6 0 0 | 0 10 0 |
| 4—Parkinson and Cowan, Limited..... | 3 18 0 | 0 6 6 |
| 6— " " " " ..... | 4 10 0 | 0 7 6 |
| 8— " " " " ..... | 5 2 0 | 0 8 6 |
| 10— " " " " ..... | 6 0 0 | 0 10 0 |
| 30—Wright and Butler Man'f'g Co., L't'd. | 3 18 0 | 0 6 6 |
| 40— " " " " " " | 4 10 0 | 0 7 6 |
| 50— " " " " " " | 5 2 0 | 0 8 6 |
| 60— " " " " " " | 6 0 0 | 0 10 0 |
| The charge for fixing a stove of any of these sizes complete, including supply pipe from meter, if required, is..... | 1 4 0 | 0 2 0 |

(Consumers, if they prefer, may employ private gas fitters to lay the supply pipe and fix the stove.)

Particulars of stoves of other sizes than are quoted, and of heating stoves, may be obtained on application at the gas offices, Edmund Street, Birmingham.

It will be observed that the sale price may be paid, if desired, by twelve quarterly hire payments. During this period the stoves will be maintained, as regards fair wear and tear.

When stoves are sold on three years' hire-purchase system, the cost of fitting may, if desired, be added to the cost of the stove, and paid in the twelve quarterly payments with the stove. In such cases the hirer of the stove will be required to pay the balance owing for the fittings if the stove is returned before the expiration of three years.

Purchasers on the three years' hire system may, at any time before the twelve quarterly hire payments have been completed, pay the balance owing, less a discount of 5 per cent.

Should the hirer desire to return a cooking stove to the Department before the purchase has been completed, one-half of the payments which have been made will be returned, less any unpaid balance of cost of fixing the stove.

If a prepayment meter is used, it is rented and fixed free, and cookers and fittings are also supplied free to cottages let on weekly tenancies.

[8] The cost of fixing meters and of all pipes and fittings on private premises is charged to the consumer, except in the case of prepayment gas supplies, in which the meter, fittings and cooker are supplied and fixed free of charge by the department. Charge for fixing meters, including materials within 2 miles from offices, about 6s. 6d. for three light and 7s. 6d. for five-light meters; without main taps and connections, about 3s. 6d. and 4s.

[9] The rents for stoves with ordinary meters are:

| *Oven Measurements. Inches (Inside).* | | | *Rent per Quarter.* |
|---|---|---|---|
| *Height.* | *Width.* | *Depth.* | s. d. |
| 28½ | 17 | 18½ | 3/6 |
| 28¾ | 19¼ | 16½ | 3/3 |
| 28 | 15 | 15 | 2/3 |
| 27 | 14¼ | 13¾ | 1/9 |
| 25½ | 12¾ | 11¾ | 1/6 |
| 23¼ | 13 | 14½ | 1/3 |
| 19 | 12½ | 12½ | 1/0 |
| 16 | 10 | 10 | 0/6 |

All with grillers and boiling burners on top.

[10] If hired with ordinary meters the fitting is done through the fitting department at ordinary tradesmen's prices to the customer, or the work may be undertaken by any local tradesman, who would charge the customer direct. The charges vary according to the position of the stove and the size of the stove and fittings.

[11] Meter rents per quarter are:

| | | | | | |
|---|---|---|---|---|---|
| 3-light | 0/9 | 40-light | 2/6 | 120-light | 7/6 |
| 5- " | 1/0 | 50- " | 3/0 | 150- " | 10/0 |
| 10- " | 1/3 | 60- " | 4/0 | 200- " | 12/6 |
| 20- " | 1/9 | 80- " | 5/0 | 250- " | 15/0 |
| 30- " | 2/3 | 100- " | 6/6 | etc. | |

[12] To consumers using ordinary meters, cooking stoves are let on hire at rentals ranging from 1s. 6d. to 4s. per quarter, equal to from 10 to 12 per cent. per annum on net cost. In fixing these, the cost of material (which may be taken to be from 5s. to 7s.) is paid by the consumer, no charge being made for labor.

[24] A charge of 2d. per lineal foot is made for the piping; no charge for taps or labor.

[25] Meter rents per quarter:

| | | | | | |
|---|---|---|---|---|---|
| 3-light..... | 0/9 | 30-light..... | 3/0 | 100-light..... | 7/6 |
| 5- " ..... | 1/3 | 50- " ..... | 4/0 | 150- " ..... | 10/0 |
| 10- " ..... | 1/8 | 60- " ..... | 4/6 | 200- " ..... | 12/6 |
| 20- " ..... | 2/2 | 80- " ..... | 5/0 | Larger sizes on application. | |

[26] Meter rents per annum:

| | | | | | |
|---|---|---|---|---|---|
| 2-light..... | 2/8 | 20-light..... | 7/4 | 60-light..... | £1 0 0 |
| 3- " ..... | 2/8 | 30- " ..... | 10/0 | 80- " ..... | 1 6 0 |
| 5- " ..... | 4/0 | 45- " ..... | 15/0 | 100- " ..... | 1 12 0 |
| 10- " ..... | 5/4 | 50- " ..... | 16/8 | Etc. | |

[27] When the fittings were supplied and fixed at the cost of the department, 26 cu. ft. were given for 1d.—about 3/2 per M. cu. ft. In the Revenue Account the gas consumed through prepayment meters is calculated at 2/6 per 1,000 cubic feet only. The difference between the 2/6 per 1,000 and the amount charged for the gas is applied to redeem the capital outlay incurred in installing the lighting and cooking appliances in the houses of this class of consumer.

I 6. Were other appliances supplied free to customers?

No, except as above stated. In this connection reference should be made to I 2, for where a high charge is made for gas consumed through prepayment meters, it is sometimes considered as a return in part or in whole for the appliances furnished free.

I 7. Did consumer pay for connections with mains?

*Birmingham.* No, except service pipe on private ground.

*Glasgow.* No, except fittings and service pipe over 20 feet; a great number exceed 20 feet.

*Manchester.* No, except on private property; then ordinary services were free.

*Leicester.* No, except services on private ground.

*Companies.* No.

I 8. Was any part of the cost of mains paid by consumers or property owners?

No instance was found except in Glasgow, where on one occasion, at the request of the inhabitants of a small village at considerable distance from the mains, a charge of 25 per cent of the cost of laying the main was made and paid for.

I 9. Were extensions to new territory made free or charged for?

*Municipalities.* No charges were made except in Birmingham where main pipes are run free whenever business warrants it, but otherwise a charge is made of 4 per cent per annum until extensions become remunerative.

*Companies.* No charges were made.

I 10. Were these schedules and rules strictly enforced?

*Municipalities.* Yes, in every instance.

*Companies.* Yes, except in Sheffield where allowances were made in exceptional instances.

**I 11. Were rates reduced or increased between Jan. 1, 1900 and 1906?**

***Birmingham.*** Price of gas per M. cu. ft.:—

| *Gas Consumed per Quarter in One Building.* | *1900. to Sept., 1903.* | *Sept., 1903. to Sept., 1905.* | *Sept., 1905, to Jan., 1906.* |
|---|---|---|---|
| Under 25,000 cu. ft..... | 2/9 | 2/6 | 2/6 |
| 25,000—50,000 ..... | 2/7 | 2/6 | 2/6 |
| 50,000—250,000 ..... | 2/5 | 2/3 | 2/3 |
| 250,000—1,000,000 ..... | 2/3 | 2/0 | 2/0 |
| 1,000,000 and upward... | 2/3 | 1/10 | 1/10 |
| For power purposes..... | as above | as above | 1/10 |

***Glasgow.*** Price of gas per M. cu. ft.:—

| *Years.* | *Lighting and Heating.* | *Power.* |
|---|---|---|
| 1900 ..... | 2/2 | 2/2 |
| 1901 ..... | 2/6 | 2/6 |
| 1902 ..... | 2/6 | 2/6 |
| 1903 ..... | 2/4 | 2/0 |
| 1904 ..... | 2/1 | 2/0 |
| 1905 ..... | 2/1 | 2/0 |

***Manchester.*** Price of gas per M. cu. ft., the first figure in each column being the price within the city; the second the price outside:—

| *Years.* | *Lighting and Heating.* | *Power.* | *Prepayment Meter.* |
|---|---|---|---|
| 1900 ..... | 2/3 & 2/6 | 2/0 & 2/3 | 2/9 & 3/4 |
| 1901 ..... | 2/6 & 2/9 | 2/0 & 2/3 | 2/9 & 3/4 |
| 1902 ..... | 2/9 & 3/0 | 2/0 & 2/3 | 2/9 & 3/4 |
| 1903 ..... | 2/9 & 3/0 | 2/0 & 2/3 | 2/9 & 3/4 |
| 1904 ..... | 2/6 & 2/9 | 2/0 & 2/3 | 2/9 & 3/4 |
| 1905 ..... | 2/4 & 2/7 | 2/0 & 2/3 | 2/9 & 3/4 |

*Leicester.* Price of gas per M. cu. ft., the first figure in each column being the price within the city; the second the highest price outside:—

| *Years.* | *Lighting and Heating.* | *Power.* | *Prepayment Meter.* |
|---|---|---|---|
| 1900 ..... | 2/6—3/2 | 2/2—2/10 | 2/11 1-2—3/6 |
| 1901 ..... | 2/6—3/2 | 2/2—2/10 | 2/11 1-2—3/6 |
| 1902 ..... | 2/4—3/0 | 2/0—2/8 | 2/9 1-3—3/6 |
| 1903 ..... | 2/4—3/0 | 2/0—2/8 | 2/9 1-3—3/6 |
| 1904 ..... | 2/4—3/0 | 2/0—2/8 | 2/9 1-3—3/6 |
| 1905 ..... | 2/4—3/0 | 1/6—2/2 | 2/9 1-3—3/6 |

*London—So. M.* Price of gas per M. cu. ft.:—

| *Years.* | *Lighting and Heating.* | *Power.* | *Prepayment Meter.* |
|---|---|---|---|
| 1900 | 2/3 | 2/3 | 3/0 |
| 1901 | 2/3 | 2/3 | 3/0 |
| 1902 | 2/3 | 2/3 | 3/0 |
| 1903 | 2/3 | 2/3 | 3/0 |
| 1904 to June 30th | 2/1 | 2/1 | 2/10 |
| 1904, June 30 to Dec. 31 | 2/0 | 2/0 | 2/9 |
| 1905 | 2/0 | 2/0 | 2/9 |

The discounts allowed throughout were 3 per cent. on all bills amounting to £100 or over per year, 4 per cent, on all over £500, and 5 per cent. on all over £1,000.

*Newcastle.* Price of gas per M. cu. ft., the lowest figure in each column being the price charged within Newcastle and Gateshead; the highest, that charged in the most remote district:—

| *Years.* | *Lighting and Heating.* | *Power.* | *Prepayment Meter.* |
|---|---|---|---|
| 1900 | 2/3—4/0 | 2/3—4/0 | 2/3—4/0 |
| 1901 | 2/2—4/0 | 2/2—4/0 | 2/2—4/0 |
| 1902 | 2/1—4/0 | 2/1—4/0 | 2/1—4/0 |
| 1903 | 2/1—3/6 | 2/1—3/6 | 2/1—3/6 |
| 1904 | 2/0—3/5 | 2/0—3/5 | 2/0—3/5 |
| 1905 | 2/0—3/5 | 2/0—3/5 | 2/0—3/5 |

The discounts from 1900 to 1904 were 10 per cent. on all up to 400,000 cubic feet per quarter and 15 per cent. on all over that amount. The discounts for 1905 are given under I 2-5.

*Sheffield.* Price of gas per M. cu. ft.:—

| *Per Annum.* | *1901.* | *1902.* | *1903.* | *1904 to April 1, 1905.* | *Apr. 1 to Dec. 31, 1905.* |
|---|---|---|---|---|---|
| Up to 500,000 | 2/2, 2/0 | 2/0 | 1/10 | 1/8 | 1/6 |
| 500,000 to 6,000,000 | 2/0, 1/10 | 1/10 | 1/8 | 1/6 | 1/4 |
| All over 6,000,000 | 1/10, 1/8 | 1/8 | 1/6 | 1/4 | 1/2 |

I 12. Was the reduction voluntary, the result of law or ordinance or competition?

Voluntary in each instance, but due possibly to competition in part.

I 13. If plant has undergone a change from private to public management, or vice versa, give rates just before and after change.

*Birmingham.* During last year of company's operation, 1875, prices ranged from 3s. to 3s. 6d.; first year of municipal control, 1876, 2s. 9d. to 3s. 3d.

*Glasgow.* Price was the same during 1869—last year of company control—and 1870—first year of municipal operation.

*Manchester.* Always a public plant.

*Leicester.* Prices were the same in 1877 and 1878; the purchase was of date July 1, 1878.

I 14. Were bills considered as liens against property?

Only as bills against consumer, in every instance.

I 15. How were bills collected?

*Birmingham.* City does not employ collectors, but grants 5 per cent discount for prompt payment at the head and 19 branch offices.

*Glasgow.* The area of supply is divided into districts and a certain number of districts allocated to each collector who is held responsible for collection of accounts in districts under his charge. A central office is provided where payment may be made also.

*Manchester.* Personal visits by collectors.

*Leicester.* By collectors, by consumers coming to gas office and by mail. A large proportion pay at office and by check.

*London—So. M.* By mail, collectors and consumers at office.

*Newcastle.* By collectors and at office by consumers personally.

*Sheffield.* By collectors and by consumers paying at gas offices. A large proportion of bills are paid at office.

I 16. How often were collections made?

*Birmingham, Leicester.* Quarterly for ordinary meter accounts; every 6 weeks for prepayment meter accounts.

*Glasgow.* Three times a year.

*Manchester.* Ordinary accounts, quarterly; prepayment, monthly.

*London—So. M.* Regular bills, quarterly; prepayment meters, every 5 weeks.

*Newcastle, Sheffield.* Quarterly.

I 17. What system of accounts was used during last fiscal year?

In every instance the standard form of the Act of 1871.

I 18. By whom were the accounts audited?

*Birmingham.* By a firm of chartered accountants—Messrs. Howard Smith, Slocombe & Co., Birmingham. City also had an internal audit conducted by a special staff under the direction of the secretary. The various accounts of the city of Birmingham are audited by several distinct firms of chartered accountants. There was also an audit by the elective and mayor's auditors.

*Glasgow.* By a professional firm of chartered accountants—Messrs. Kerr, Andersons & MacLeod, Glasgow.

*Manchester.* Messrs. Butcher, Litton & Pownall, chartered accountants, Manchester; and the elective and mayor's auditors.

*Leicester.* Messrs. Wykes & Co., chartered accountants, Leicester; and the elective and mayor's auditors.

*London—So. M.* First by auditors of shareholders; then by official auditor of the Board of Trade.

*Newcastle.* John H. Armstrong, C.A., Newcastle.

*Sheffield.* By a chartered accountant.

I 19. Who paid for this auditing?

*Municipalities.* The gas department in each case except Manchester, where the city paid for it.

*Companies.* The company in each case.

I 20. Who selected the auditor?

*Municipalities.* The professional auditors by the city council in each case, the elective auditors by the ratepayers and the mayor's auditor by the mayor.

*London.* The company's auditors, by the shareholders; the official auditors, by the Board of Trade.

*Newcastle.* Named by the company and approved by the towns of Newcastle and Gateshead.

*Sheffield.* City council.

I 21. Was each item charged to the proper account?

*Municipalities.* Yes, except the items noted under I 29.

*Companies.* Yes, as certified by the auditors.

I 22. What provision was there for assuring that each item was properly charged?

Besides the audit prescribed under inquiry I 18:—

*Birmingham.* All accounts were closely scrutinized by the chief officers of the department, and charged as they determined.

*Glasgow.* The requisition order, which stated for what purpose the goods were to be used, was compared with the account and an allocation made of what ledger account was to be debited therewith.

*Manchester.* The certificates of the departmental managers and the accountant.

*Leicester.* All bills were checked and classified by an accountant of the undertaking.

*London—So. M.* All bills were classified by the engineer, then checked by the accountants' and secretary's department.

*Newcastle.* All accounts were certified as to quantity, quality and price by officials responsible for the same, and properly apportioned between the various accounts by a clerk under the supervision of the chief accountant.

*Sheffield.* All accounts were analyzed by the chief accountant who decided the headings under which they were to be booked. Charges were allocated according to a regular system.

I 23. Were the accounts of the particular plant kept separate from all others and from the general accounts of the city?

Yes, in each instance.

I 24. As regards taxes, fire insurance, boiler insurance, water, rents of lands and buildings not owned but used, interest

on loan debt and other liabilities, were the expenses charged in the books of the undertaking and included in the financial returns?

The accounts of each plant were charged with the amount spent.

I 25. As regards accident insurance and payments for claims and damages, were the expenses charged in the books of the undertaking and included in the financial returns?

The accounts of each plant were charged with the amount expended, but some took out the ordinary insurance policy while others did their own insuring.

I 26. As to gas used in plant and offices, was the cost charged in the books of the undertaking and included in the financial returns?

A record was kept in each instance, but no entry was made either upon the debit or the credit side of the revenue account, except in Manchester, when entries were made upon both sides of the ledger.

I 27. Were charges made for "depreciation" in the books of the undertaking and included in the financial returns?

In this connection it is advisable to consider not only the ordinary charges for repairs and maintenance but payments out of revenue to sinking and reserve funds and in aid of rates—taxes, as well as depreciation funds. Sinking funds will be considered under I 28; the others here.

I. Payments to Depreciation Funds.

*Birmingham.* No depreciation was charged except an item of £61,232 for "buildings and plant abandoned, plant transferred to stock, etc.," deducted from the capital outlay, included in the expenditures for maintenance, and not appearing therefore in net profit account—M 3. This practice has been followed for some time, and valuations are periodically made.

*Glasgow.* The amount written off for depreciation last year was £36,199, computed by taking the following percentages on the capital cost: Works, 1¼ per cent; pipes, 1¼ per cent; meters, 6 per cent; stoves, 10 per cent; premium paid for stock in the old gas companies, 2½ per cent.

The capital outlay as given in the reports of the undertaking is reduced by the depreciation written off each year, but in this schedule the capital outlay has been put at its original cost and the depreciation given as a fund—£1,346,657—upon the liabilities side.

*Manchester.* Depreciation was charged prior to 1892, and since that date there has been no charge, but only actual renewals.

*Leicester.* No depreciation was charged except upon gas stoves and meters.

*London—So. M.* No depreciation was charged.

*Newcastle.* No depreciation except as to meters and stoves; whenever any of these were broken up they were charged to revenue.

*Sheffield.* No depreciation except upon meters and stoves.

II. Payments to Reserve Funds.

*Birmingham.* There was no payment to the reserve fund during the year. It stands at £100,000 and is invested in securities. The income thereon was not credited to the department but applied in aid of rate. The contingent fund stood at £2,000.

*Glasgow.* A contingency fund of £19,289 has been built up out of surplus profits. It was not invested, but formed a part of the working capital. In addition there was a balance of unapplied profits of £21,026.

*Manchester.* A reserve fund of £147,608 has been provided out of revenue, represented by working capital. The revenue account was not charged with any interest for the use of this fund.

*Leicester.* The reserve fund of £87,828 consists of £79,828, the reserve fund of the old company invested in plant, and of £8,000, invested in the city funds, and has been created out of profits. The income thereon was credited to the revenue account.

*London—So. M.* This company has accumulated a reserve fund of £174,305, which has been provided out of surplus profits and also increased by interest received on specific investments representing the fund. At the close of 1905 this fund was all specifically invested with the exception of £73,932.

A renewal fund for the redemption of leasehold properties of £23,962 has also been accumulated. This fund has been created out of revenue by annual transfers which for the past six years have been at the rate of £300 per annum. It has also been increased by interest on the specific investments representing the fund and has from time to time been applied in purchasing leases of properties occupied by the company. The amount of the fund uninvested at December 31, 1905, was £2,525.

The company has also out of profits accumulated an "insurance fund" which is really an ordinary reserve fund which may be set aside according to the special acts. It is to meet any extraordinary claim, demand or charge which may at any time arise against or fall upon the company from accidents, strikes or other circumstances which in the opinion of the auditors due care and management could not have prevented. The credit was £105,189, which has been provided by annual contributions from revenue and increased by interest on the specific investments representing the fund. The whole of this fund is specifically invested with the exception of £3,382.

In addition the company has carried forward undivided profits amounting to £5,683.

*Newcastle.* The reserve fund stood at £60,000, the limit allowed by statute. It was represented by the general assets. No entry was made in the revenue account for the interest thereon. There was also an unapplied profit of £17,537.

*Sheffield.* The reserve fund of this company was also at the limit allowed by statute—£86,848. It was invested and the interest credited to income account. In addition the company has accumulated a surplus of undivided profits amounting to £83,972 to provide for any rise in the price of coal and to keep the price of gas at its present level, although this is primarily the function of the reserve fund proper.

The company has a further reserve fund accumulated out of premiums received on capital issued, amounting to £19,706. The company is not empowered to pay dividends upon this sum, and there is no obligation to repay it at any time or upon the winding up of the company. In the latter event it would be represented by the general surplus assets of the company, and be distributed *pro rata* among the whole of the shareholders.

### III. Payments in Aid of Rates—Taxes.

The amounts paid over in aid of rate are as much an application of surplus profits as the provision of a reserve fund. The reserve fund appears in the accounts of the undertaking, but profit applied in aid of rate is not generally shown in the accounts and then only as a memorandum. The following table summarizes the facts:

| *Towns.* | *Amount.* | *Years.* | *Annual Average.* | *Year Under Review.* | *How Applied.* |
|---|---|---|---|---|---|
| Birmingham ... | £923,684 | 29 | £31,851 | £50,526 | In aid of General Imp. Rate. |
| | 302,152 | 29 | 10,419 | 14,963 | Do. Public Lighting. |
| Glasgow ..... | 21,235 | 1881 to 1890 | ..... | ..... | Contribution to General Expenses of City. |
| Manchester .... | 2,689,302 | 62 | 43,376 | 60,000 | Note (1). |
| Leicester ..... | 581,301 | 27 | 21,530 | 43,467 | Note (2). |
| Improvement Rate..... | | | | | £1,367,641 |
| City Rate..... | | | | | 826,194 |
| Water Committee..... | | | | | 166,265 |
| Street Lighting..... | | | | | 329,202 |
| | | | | | £2,689,302 |

I 28. Were payments to sinking funds charged in the books of the undertaking and included in the financial returns?

*Municipalities.* The statutory provisions outlined under inquiry D 25, supra, have been obeyed in each instance.

(1) The total contributed since 1843 has been applied as follows:
(2) In aid of district rate for public health purposes.

SUMMARY OF SINKING FUND BALANCES.

| *Town.* | *Sinking Fund set aside but not applied in redemption.* | *Cash in Bank.* | *Invested.* | *How Invested.* |
|---|---|---|---|---|
| Birmingham ..... | £67,060 | £16,062 | £50,998 | Outside Securities |
| Glasgow ..... | 29,572 | 29,572 | ..... | ..... |
| Manchester ..... | 29,410 | 29,410 | ..... | ..... |
| Leicester ..... | 155,321 | ..... | 155,321 | Municipality |

See additional data under I 33 and K 6.

Mr. Turner has had considerable experience in connection with municipal sinking funds, and we can assure the Commission that the figures as given in the published accounts are absolutely reliable apart altogether from the question of the audit of the accounts. Also it is quite impossible for any municipality to employ any part of its sinking fund in providing working capital, or in any manner other than its legitimate purpose, namely, the repayment of loan debt. Any part of the sinking fund not so applied must be represented either by cash in the bank or invested in outside securities or where permitted by statute invested in the authorized loans of the same municipality, as at Leicester. It should be borne in mind, however, that the sinking fund may not be invested in any other department of the same municipality unless that department has obtained statutory powers to borrow the amount and is therefore under a statutory obligation to set aside out of revenue a sinking fund for its redemption.

*Companies.* No sinking fund obligations in any instance.

I 29. Were there any charges which should properly be included in expenses but which were actually paid from other sources and not charged to the plant, such as the services of the town clerk, city treasurer, etc.?

*Birmingham.* The approximate value of the services not charged was about £1,000.

*Glasgow.* None; all charged against the department.

*Manchester.* It is estimated that £1,500 would fully cover the value of these services, including the town clerk, city treasurer, city architect and professional auditors.

*Leicester.* The approximate value of the services was £1,500 a year. As far as could be ascertained, the gas undertaking stood on its own bottom. The services rendered by the paving department, water department, etc., were paid in full, all bills being rendered in detail. They were looked over and found to be in regular order.

*Companies.* No items were omitted except in Sheffield where most of the income tax does not appear in expenditures under "taxes," but is included in the item—"dividends on share capital."

I 30. Were there any items which should be credited to the income account, which were not so credited, such as gas furnished free to any public department, employe or other person?

*Birmingham.* Gas was supplied to public authorities for public lighting at 1s. per M. cu. ft.—about one-half the price to ordinary consumers. The difference between the price actually charged and the ordinary rates was said to be £14,962, according to the report of the gas committee, which item does not appear in the revenue account. The method of determining the amount used by public lamps was to meter one lamp in every 12 and compute the amount used by the others from this one.

The reserve fund of £100,000 is invested in the general funds of the city. The investment brings in a clear 4 per cent without deduction for income tax, and this item of £4,000 was not included as part of the revenue of the undertaking in the accounts. It is applied in aid of the improvement rate, and the contribution for the department in aid of rate should therefore be increased by £4,000 above the amount returned in the reports.

*Glasgow.* None, except gas supplied to public clocks and two exhibitions held in the city. The approximate value of this service was £387. No entry was made in the accounts.

*Manchester.* None.

*Leicester.* None, except a possible item for street lighting. The consumption of gas in street lamps is computed at 5 feet per hour for open flame burners, and 4 feet per hour for incandescent burners. The charge for gas for public lighting was 2s. 2d. in Leicester, or 2d. below the lowest rate to ordinary consumers. The amount consumed in Leicester during last year was 51,658 M. cu. ft. At 2d. per M. the difference would amount to £430.

*London—So. M.* None, except the gas supplied to the chief engineer and the engineers in charge of the various works and stations. The approximate value was very small, and entries were made upon the debit and credit sides of the revenue account.

*Newcastle.* Nine officials of the company were supplied free and consumed 1,141,500 cu. ft. The value would be about £103 at 2s. per M. less 10 per cent. No entry was made in the revenue account, but the amount was included in gas used at the works. In addition, 69 officials used during the year 1,286,600, for which they were allowed a discount of 50 per cent instead of the usual discount of 10 per cent. The net value of the free service was, therefore, £73. All workmen of the company get an additional discount of 10 per cent, or 20 per cent in all. In these cases, the actual amount of money received is credited to the revenue account, but no entry is made for the value of the free service.

*Sheffield.* No free service.

I 31. Was there a storeroom account to which materials were charged when purchased?

*Municipalities.* Yes, in each instance except at Glasgow where purchases were debited direct and stock taken at the close of the year, credited thereto and debited to general stores account. These were written back again at the beginning of the next financial year. In the other undertakings strict accounts were kept of all stores, and debits and credits were made when received and issued.

*Companies.* Yes, regular store accounts were kept, and material debited and credited as received and issued.

I 32. How did the rate of interest paid by the city compare with the rate paid by private public service companies?

*Birmingham.* The city pays from ½ to 1 per cent less than companies.

*Glasgow.* The city is paying 3 per cent, and private companies 4 to 4½ per cent.

*Manchester.* The average rate paid by the gas undertaking was £3 11s. 7d. per cent as compared with 4 per cent paid by private companies on debenture capital only.

*Leicester.* There was no private company to compare with in Leicester, but the South Metropolitan Gas Company of London issued debentures at about the same rate as Leicester.

*London—So. M.* About the same—average 3.4 per cent.

*Newcastle.* The company paid 3½ per cent on debenture stock; the city borrowed at 3 and 3½ per cent.

I 33. What is the amount of the bonds or other liabilities of the plant cancelled since it began operation?

| | *Liabilities Redeemed.* | *Sinking Fund Unapplied.* | *Total.* |
|---|---|---|---|
| Birmingham ..... | £666,561 | £67,060 | £733,621 |
| Glasgow ..... | [1] 517,925 | 29,572 | 547,497 |
| Manchester ..... | [2] 1,201,814 | 29,410 | 1,231,224 |
| Leicester ..... | 89,158 | 155,321 | 244,479 |
| Companies ..... | ..... | ..... | ..... |

I 34. In construction work, has a detailed record been kept of expenditures, so that the amount spent to date is known?

Yes, in every instance.

[1] Of this, £77,471 were part of premium on redemption of annuities.

[2] This amount is greater by £156,080 than the amount given under inquiry J 3, but this is accounted for by the fact that the figures under J 3 run back only to 1843. Obligations were incurred prior to 1843, and of these £156,080 have been paid off out of sinking fund.

**I 35.** Have records been kept so that it is known that the total cost will exceed the appropriation before the indebtedness for the excess is incurred? Yes, in every instance.

**I 36.** Give kind, cost and amount of coal used for boiler fuel.

None used of any kind, except at Newcastle where they used 264 tons (2,240 lbs.) of Durham bituminous coal, costing 8/1.934 per ton; and at Sheffield where they used 15,090 tons of screenings, wastings, dust, etc., from the gas coal, and the cost was included in the cost of coal carbonized.

I 37. Gas coal used during last year (ton = 2,240 lbs.).

| *Towns.* | *Kind.* | *Price.* | *Tons.* |
|---|---|---|---|
| Birmingham | York. and Derbyshire | 10/0.5 | 499,590 |
| Glasgow | Glasgow | 10/3.0 | 678,300 |
| Manchester | Lanca. and Yorkshire | 11/3.0 | 355,210 |
| Leicester | Derbyshire | 10/0.4 | 172,927 |
| London—So. M. | Durham and Yorkshire | 10/11 | 1,187,753 |
| Newcastle | Durham | 7/10.8 | 263,920 |
| Sheffield | Silkstone and cannel | 6/9.0 | 255,091 |

I 38. Enrichers. Give kind, quantity and cost of each used.

*Birmingham.* Cannel coal, 5,628 tons; carburine spirit or benzol at 8d. to 10d. per gallon, 10,014 galls.; carbureted water gas, 1,338,912 M. cu. ft. of 20 c. p., costing 13.79d. per M. cu. ft.

*Glasgow.* Gas oil, 1,935 tons (2,240 lbs. each).

*Manchester.* Distilled residuum, 3,415,294 gallons, costing £36,751, used in water gas; benzol, 112,946 gallons, costing £4,479.

*Leicester.* None. *London—So. M.* None.

*Newcastle.* Cannel, 13,250 tons, costing 13/7.671 per ton.

*Sheffield.* Cannel coal and a small quantity of benzol. Price and quantity included in above. Cannel coal 24,858 tons.

**I 39.** Give quantity and cost of water used.

*Birmingham.* Cannot say. The department has its own wells and also draws water from the canals and town supply.

*Glasgow.* Cannot say.

*Manchester.* 198,350,000 gallons: £3,681.

*Leicester.* About 4,450,000 gallons, costing £121 16s. 8d.

*London—So. M.* Cannot give quantity. The cost was £3,067.

*Newcastle.* 59,331,000 gallons, costing £1,298 15s. 5d.

*Sheffield.* Quantity unknown, but cost was £349.

**I 40.** Give quantity of each by-product produced, used and sold.

COKE AND BREEZE (ton = 2,240 lbs.).

| *Towns.* | *Made.* | *Used.* | *Sold.*[1] | *Price.* |
|---|---|---|---|---|
| Birmingham ..... | 316,654 | 65.809 | 243,496 | 9/2.31 |
| Glasgow ..... | 373,329 | 116,962 | 260,581 | 6/0.26 |
| Manchester ..... | 232,360 | 60,383 | 171,977 | 7/0.57 |
| Leicester ..... | 108,916 | 28,759 | 86,095 | 7/5 |
| London—So. M. | | | | |
| Coke ..... | 729,574 | 186,595 | 585,176 | 9/7.20 |
| Breeze[2] ..... | 264,147 | 94,245 | 157,269 | 1/10.34 |
| Newcastle ..... | 189.324 | 51,064 | 138,260 | 10/11.25 |
| Sheffield ..... | 171,860 | 45,563 | 125,197 | 10/2.33 |

TAR.

| *Towns.* | *Made.* | *Used.* | *Sold.* | *Price.* |
|---|---|---|---|---|
| Birmingham — gals. | 6,471,472 | none | 5,844,260 | 1.45d. |
| Glasgow[3]..... | ..... | ..... | ..... | .... |
| Manchester—tons ... | 24,301 | none | 24,301 | 17/0.8 |
| Leicester—tons[4]..... | 10,272 | ..... | ..... | .... |
| London So. M.—gals. | 11,356,963 | 5,509,606 | 5,769,660 | 2.95d. |
| Newcastle—gals. .... | 2,776,009 | 49,244 | 2,726,765 | 1.03d. |
| Sheffield—tons ..... | 15,743 | none | 15,543 | 27/9.4 |

AMMONIACAL LIQUOR (GALLONS.)

| *Towns.* | *Made.* | *Sold.* | *Price.* |
|---|---|---|---|
| Birmingham ..... | 17,345,989 | 17,325,075 | .69d. |
| Glasgow..... | See note (3) above. | | |
| Manchester[5]..... | 10,243 457 | 10,243,457 | .84d. |
| Leicester..... | 6,052.369 | See note (6) above. | |
| London—butts .... | 378,025 | 378,926[4] | 73.94d. |
| Newcastle—tons ... | 2,436.2 | 2,436.2 | £12—6—5 |
| Sheffield—tons .... | 3,251 | 3,251 | 10—7—6 |

The other by-products were only of minor importance.

I 41. What were the provisions of the contract between the company and city for public lighting? (See inquiry I 2.)

*Municipalities.* Inquiry not applicable.

*Companies.* No contract. (See inquiry D 15.)

I 42. Public lighting.

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[1] This amount does not always equal the amount used plus the amount sold, as the stock on hand may not always be the same at the beginning as at the end of the year.

[2] These figures are all for cubic yards, not tons.

[3] Amount not given; sold to contractors who took the whole supply and also the ammoniacal liquor.

[4] Worked up with ammoniacal liquor in the chemical plant.

[5] Converted into sulphate of ammonia.

[6] Utilized by conversion into sulphate of ammonia and then sold.

| *Towns.* | *Number of Lamps.* | *Ordinary.* | *Incandescent.* | *Number of Hours Lighted.* |
|---|---|---|---|---|
| Birmingham ..... | 20,653 | 10,989 | 9,664 | 3,900 |
| Glasgow ..... | 26,501 | 8,732 | 17,769 | 3,711 |
| Manchester ..... | 19,439 | 13,573 | 5,866 | 3,760 |
| Leicester ..... | 5,962 | 3,025 | 2,937 | 3,467 |
| London—So. M.... | 22,879 | 1,029 | 21,850 | 4,200 |
| Newcastle ..... | 13,109 | 6,287 | 6,822 | 3,777 |
| Sheffield ..... | 10,480 | 3,057 | 7,423 | 3,737 |

I 43. Who owned the lampposts?

I 44. Give price for street lighting per M. cu. ft.

I 45. Did the prices given here and under I 2 include care, maintenance and renewals?

| *Towns.* | *I 43.* | *I 44.* | *I 45.* |
|---|---|---|---|
| Birmingham ..... | City | 1/0 | Yes. |
| Glasgow ..... | City | 2/1 & 3/1 | No. |
| Manchester ..... | City | 2/4 & 2/7 | No. |
| Leicester ..... | City | 2/2—3/0 | No. |
| London—So. M. ... | City | Note [1] | Partly [2] |
| Newcastle ..... | Company | 2/0—3/5 | Partly |
| Sheffield ..... | City | 1/4 & 1/2 | No. |

*Birmingham.* The gas department has charge of the public lamps and spent £3,295 during the year for lighting and repairing.

*Glasgow, Leicester.* A separate department owns the lampposts and maintains, cleans, lights and extinguishes the lamps.

*Manchester.* The gas department has entire charge, and charges the city the actual cost of maintenance, etc.

*London—So. M.* The local authorities only light and extinguish.

*Newcastle.* The company has full control and does all the work, the city paying the actual cost.

*Sheffield.* The city does all this work at its own expense.

I 46. Were a budget of the estimated receipts and expenditures and an appropriation made up annually?

*Municipalities.* The several committees of the council prepared each year an estimate of the money which they anticipate will be received and required during the forthcoming year. Where the department contributes toward the general rate of the city, the estimated contribution was deducted in arriving at the tax rate to be levied. The control of the actual expenditure was entirely

[1] Prices vary from £2 9s. 2d., for a small-sized burner, to £3 4s. 5d., for a larger-sized burner, per annum for a Kern incandescent burner, including cleaning, maintenance and repairs as well as the gas furnished.

[2] The price includes cleaning, repairs and maintenance, but the local authorities must light and extinguish.

in the hands of the committee having charge of the undertaking, and it was not debarred from exceeding the estimate.

*Companies.* The expenditure was solely in the hands of the directors to act as they thought fit.

## J—SHARE AND LOAN CAPITAL.

J 1. Share capital.

*Municipalities* have no share capital.

| *Amounts.* | *London—So. M.* | *Newcastle.* | *Sheffield.* |
|---|---|---|---|
| Authorized | £6,761,224 | £2,857,571 | £868,482 |
| Called up | 6,250,000 | 2,229,816 | 868,482 |
| Uncalled | 461,224 | ..... | ..... |
| Unissued | ..... | 627,755 | ..... |
| Fully paid | [1] 6,250,000 | [3] 2,229,816 | [2] 868,418 |
| Number of shareholders. | 15,000 | (?) | 1,369 |

J 2. Explain how share capital was issued.

*London—So. M.* The manner in which the stock was issued is fully explained in the special acts relating to the company.

| | | |
|---|---|---|
| The company has received in cash for shares issued, excluding premium | £2,965,000 | |
| and has added on conversion of capital from 10 to 4 per cent | 3,285,000 | |
| | | 6,250,000 |

being amount on which dividend is now payable.

The capital unissued is made up as follows:

| | | |
|---|---|---|
| Amount authorized by Act of 1901 | £750,000 | |
| Deduct premium received on issue of part | 50,000 | |
| | £700,000 | |
| Cash received being par value of stock issued, including above | 238,776 | 461,224 |
| | | 6,711,224 |
| Add premium (above) | | 50,000 |
| Total amount authorized per accounts | | £6,761,224 |

The directors from time to time have given the consumers the option of investing in the company's stock at the market price; and at December 31, 1905, the consumers had invested about £1,250,000. At that date the price of £100 stock to consumers was £130.

[1] There is apparently a discrepancy of £50,000 here, for the sum of the paid, the uncalled and the called up capital does not equal by this amount the sum authorized. But the amount authorized includes premiums, of which there are £50,000, but as no share capital may be issued for them, they do not appear here.

[2] Arrears of £64.

[3] Includes premiums added on conversion; see J 2.

*Newcastle.* The above amount of capital is made up as follows:

| | |
|---|---|
| Paid up in cash | £1,108,487 |
| Stock added on conversion from 7 per cent to 3½ per cent | 777,571 |
| Premiums received on issues of stock | 343,758 |
| | £2,229,816 |

The original capital was issued with a maximum dividend of 7 per cent, but in 1901 the dividend was reduced to 3½ per cent, and the nominal capital was doubled, being increased by £777,571

This amount appears on the asset side of the published accounts of the company as an application of part of the capital on the liability side. Under Act of 1873 there was added to the share capital on consolidation of stock ..... 48,571

This amount was not shown separately in the published accounts, but was included in the amount of capital expended on works.

These two items amount to ..... £826,142

The company has received premiums as follows:

| | | |
|---|---|---|
| On share capital | £369,735 | |
| On debentures | 23,278 | £393,013 |
| Leaving a balance of | | £433,129 |

which represents the amount appearing as owing to share and loan holders which has not been paid for in cash. We have included this amount on the asset side of the balance sheet in the Schedule, after the actual assets.

*Sheffield.* The ordinary stock of the company was issued at par to shareholders, with the exception of £6,585 not taken up by shareholders, which was sold at auction and realized a premium of £9,212 which was treated as capital.

J 3. Loan capital. (Debenture stock or mortgages are analagous to bonds in the United States).

| *Towns.* | *Authorized.* | *Issued.* | *Paid Off.* | *Outstanding.* |
|---|---|---|---|---|
| Birmingham ..... | £3,008,949 | £2,908,949 | £666,561 | £2,242,388 |
| Glasgow ..... | 3,615,000 | 2,389,310 | 440,454 | 1,948,856 |
| Manchester[1]..... | 2,400,640 | 2,291,550 | 1,045,734 | 1,245,816 |
| Leicester ..... | 1,548,759 | 1,184,959 | 89,158 | 1,095,801 |
| London—So. M.... | 2,048,994 | 1,895,445 | ..... | 1,895,445 |
| Newcastle ..... | 700,325 | 429,302 | ..... | 429,302 |
| Sheffield ..... | 200,000 | 50,000 | ..... | 50,000 |

J 4. Explain how loan capital was issued.

[1] These figures are for the period from 1843 and 1905. They do not include the years prior to 1843.

*Birmingham.* The amount authorized consists of the following:

| | |
|---|---|
| Annuities capitalized at 25 years' purchase, authorized at time of purchase | £1,275,295 |
| Birmingham municipal 3½ per cent stock | 416,718 |
| Mortgages | 500,375 |
| Birmingham municipal bills | 50,000 |
| Total outstanding | £2,242,388 |
| Borrowing powers unexercised | 100,000 |
| Annuities redeemed, stock cancelled or transferred and mortgages repaid from Sinking Fund | 666,561 |
| Total amount authorized | £3,008,949 |

The municipal bills were repaid by the issue of mortgages of in 1905-6.

*Glasgow.* Amount authorized is made up of perpetual annuities of £415,000 as described below, and loans of £3,200,000. On the transfer of the undertaking to the city, the share capital of the companies amounted to £415,000. This capital was satisfied by the issue of annuities corresponding in amount to the dividends payable.

| | 9 p.c. | 6¾ p.c. |
|---|---|---|
| Amount of original stock | £300,000 | £115,000 |
| Redeemed at a premium | 32,469 | 11,840 |
| | 267,531 | 103,160 |
| Converted into 3 per cent city stock | 69,152 | 28,805 |
| Leaving outstanding | 198,379 | 74,355 |

Together ..... £272,734

which will have to be redeemed or converted at the market value, involving an increased liability of £409,265 which is not included in the accounts.

The premiums paid and satisfied by the issue of 3 per cent stock amounted to £251,783, and this sum appears in the assets. In the published accounts this premium is shown as £174,311, but in addition to this amount a further sum has been paid which has been charged to sinking fund of ..... £77,471

| | |
|---|---|
| Together | 251,782 |
| to which should be added the above amount of | 409,265 |
| making a total premium to be dealt with of | £661,047 |

*Manchester.* The loan debt at March 31, 1905, consisted of:

| | |
|---|---|
| Loans for short periods repayable before 1916 | £774,468 |
| Loans at 3 months' notice | 10,000 |
| Loans at 6 months' notice | 5,000 |
| Consolidated stock | 456,347 |
| | £1,245,815 |

The loans for periods of years or at 3 or 6 months' notice were obtained by public subscriptions after advertisement in local newspapers. Commissions were paid by the municipality to agents introducing loans at the rate of .05 of 1 per cent for each year the money is held by the city. This commission was charged against revenue, and in 1905 amounted to £269 18s. 2d. The consolidated stock was issued by public subscription in the way described above.

*Leicester.* The issue of the original 3½ per cent redeemable stock was made in lump sum to the Leicester Gas Company in 1884 to convert the 4 per cent debenture stock that was issued when the undertaking was first taken over. All subsequent issues of stock have been put up for sale at par or at a certain price by the borough treasurer, and anyone could subscribe for them.

*London—So. M.* Under the Act of 1896 the company was authorized to convert the 5 per cent debenture stock into 3 per cent, and the amount was then increased by £566,666.

*Newcastle.* By auction or public tender.

*Sheffield.* The debenture stock of the company must be sold at auction, premium, if any, going to capital account. The sale of £50,000 4 per cent debenture stock yielded £60,494.

J 5. If funds have been secured from any other sources for the construction and extension of plant, give amounts, dates and sources fully.

In only one case is this separately shown in the balance sheet, but where it is not so shown it is quite possible that extensions have been made out of revenue and charged to ordinary maintenance without being separately distinguished. In this connection it is important to bear in mind that while some municipalities have not charged their revenue with outlay of this character, yet they are repaying by means of sinking fund which is charged to revenue, the whole of the capital which has been borrowed with the sanction of the central government for the purpose of making the outlay.

*Manchester.* Up to the present date the following outlay on capital account has been provided out of revenue in cases where borrowing powers had not been granted:

| | |
|---|---|
| Carbureted water gas plant | £83,719 |
| Whitworth street depot | 4,467 |
| Chemical works | 9,137 |

It appears that this city as well as others has charged outlay upon capital accounts to their current revenue account, and that this capital outlay does not, except in the above instances, appear in their balance sheet.

*Newcastle.* By temporary loans and overdraft from bank.

*Sheffield.* There have been expended £23,694 for capital outlay from earnings.

J 6. How has working capital been secured?

Companies generally have authority to raise money by the issue of capital stock and loans to provide working capital, but municipalities occupy a different position. A municipality has to obtain a special act or a provisional order to carry out certain definite works, and the borrowing of money for this purpose is authorized by Parliament or the central authorities, but no provision is made for working capital. As the Local Government Board does not approve of municipalities borrowing from banks, the only manner in which they can provide working capital is either to levy a rate tax for this purpose or to charge such a price as will allow it to accumulate profits to be used for this purpose. The following paragraphs show how working capital has been secured in each instance.

*Birmingham.* The sinking fund unapplied and the superannuation fund are represented by investments and cash in the Treasurer's hands. The reserve fund is specifically invested, but there is in the bank on capital account the sum of £344,609 which has not yet been applied to capital purposes.

| | | |
|---|---|---|
| The assets representing working stock, etc., are: | | |
| Sundry debtors | £255,190 | |
| Stock of stores, etc | 180,930 | |
| Cash in hand | 2,726 | |
| Consols invested | 500 | £439,346 |
| From this deduct: | | |
| Creditors on revenue a/c | £70,210 | |
| Amount in aid of rate | 50,526 | |
| Interest accrued | 5,622 | |
| Annuities accrued | 13,078 | 139,436 |
| | | £299,910 |
| Deduct also contingency fund | | 2,000 |
| Leaving amount owing to bank on revenue a/c. | | £297,910 |

*Glasgow.* The debts owing to the undertaking and the stocks on hand amount to £184,280, which is provided by money borrowed on temporary loans, bank overdraft, customers' deposits and unpaid accounts, amounting to £175,037.

*Manchester.* The special acts governing the undertaking do not provide for the raising of borrowed money for purposes of working capital. This has been provided as follows:

| | |
|---|---|
| Profits accumulated in reserve fund | £147,608 |
| Loans raised but not spent on capital outlay.. | 18,742 |
| | £166,350 |

*Leicester.* This city has no power to borrow money for purposes of working capital. The capital locked up in debts owing to the plant, stores, etc., amounts to ..... £139,080
As against which the plant has current liabilities amounting to ..... £89,109
And intends to apply in aid of rate..... 43,467 £132,576

Leaving net ..... £6,504
which is the amount of loans and surplus unexpended on works.

*London—So. M.* Working capital is £540,550.

| | | |
|---|---|---|
| Share capital ..... | £6,250,000 | |
| Loan capital ..... | 1,895,445 | £8,145,445 |
| Less nominal amount added on conversion of stocks—less premiums ..... | | 3,048,891 |
| | | £5,096,554 |
| Deduct capital outlay ..... | | 4,865,143 |
| | | £231,411 |
| And add surplus and other funds..... | | 309,139 |
| | | £540,550 |

This amount is made up as follows:

| | | |
|---|---|---|
| Cash at bank and in hand..... | | £47,928 |
| Stores on hand ..... | | 383,306 |
| Debts due to company..... | | 428,451 |
| Investments (as against funds above)..... | | 223,617 |
| Monazite Sand account ..... | | 24,139 |
| | | £1,107,441 |
| Less sundry creditors..... | £396,891 | |
| Temporary loan ..... | 170,000 | 566,891 |
| | | £540,550 |

*Newcastle.* The working capital is £101,964.

| | | |
|---|---|---|
| Stock of stores account..... | £37,922 | |
| Debts owing to plant..... | 142,257 | £180,179 |
| Less creditors ..... | | 78,214 |
| | | £101,965 |

This is provided as follows:

| | |
|---|---|
| Share capital ..... | £1,886,059 |
| Loan debt ..... | 406,025 |
| Bank overdraft ..... | 63,686 |
| Temporary loans ..... | 43,291 |
| | £2,399,061 |
| Deduct capital outlay ..... | 1,941,504 |
| | £457,557 |

| | | | |
|---|---|---|---|
| Deduct premium account | | £433,129 | |
| Less reserve fund | £60,000 | | |
| Less profit and loss account balance | 17,537 | 77,537 | 355,592 |
| | | | £101,965 |

*Sheffield.* The working capital is £60,278.

| | | |
|---|---|---|
| Share capital | £868,482 | |
| Debenture stock | 50,000 | £918,482 |
| Add premium account | £19,706 | |
| Profit and loss balance account | 83,972 | £103,678 |
| | | £1,022.160 |
| Deduct capital outlay | | 961,882 |
| | | £60,278 |

This is made up as follows:

| | |
|---|---|
| Cash at bank and in hand | £58,135 |
| Stock of stores, etc | 42,602 |
| Amounts due the company by sundry persons | 115,341 |
| | £216,078 |
| Less sundry creditors | 155,800 |
| | £60,278 |

J 7. What provisions have been made for payment of capital liabilities when due?

See inquiries D 25, I 27, I 28 and I 33.

J 8. Give the cash capital raised by the undertaking.

In the following table all items of premium added on conversion of capital stock or loans to a lower rate per cent have been eliminated from the liabilities as shown in the balance sheets below. We have added to the capital stock and loans appearing in the balance sheets all items of premiums received on issue of the same which have been credited to premium capital amount or reserve or other funds in the accounts of the plant. We have also where possible deducted from the capital outlay (as shown in the balance sheets) all items of premium and good will which are thus included.

In municipal plants we have added to the loan debt outstanding the amount of loans actually repaid out of sinking fund in order to arrive at the original capital raised for purposes of the undertaking. This is the only way in which the capital raised by municipalities can be compared with the capital raised by private companies, in which latter case no repayment of capital is required to be provided out of revenue.

| Towns. | Loan Capital Raised. Still Outstanding. | Repaid by Sinking Fund. | Capital Stock Raised. | Total Capital Raised. | Total Capital Expended on Works. |
|---|---|---|---|---|---|
| | £ | £ | £ | £ | £ |
| Birmingham .... | [1]2,242,388 | 666,561 | ..... | 2,908,949 | [2]2,566,904 |
| Glasgow ..... | [3]1,948,856 | [4]440,454 | ..... | 2,389,310 | 3,592,728 |
| Manchester ..... | [5]1,245,816 | 1,201,814 | ..... | 2,447,630 | [2]2,506,136 |
| Leicester ..... | 1,095,801 | 89,158 | ..... | 1,184,959 | 1,001,633 |
| Municipalities ... | 6,532,861 | 2,397,987 | ..... | 8,930,848 | 9,667,401 |
| London—So. M... | 1,574,696 | ..... | 3,521,858 | 5,096,554 | 4,865,143 |
| Newcastle ..... | 429,303 | ..... | 1,429,651 | 1,858,954 | 1,941,504 |
| Sheffield ..... | 60,494 | ..... | 877,694 | 938,188 | 961,882 |
| Companies ..... | 2,064,493 | ..... | 5,829,203 | 7,893,696 | 7,768,529 |
| Total ..... | 8,597,354 | 2,397,987 | 5,829,203 | 16,824,544 | 17,435,930 |

It will be noticed from the above table that the municipalities have expended more capital than they have raised. This arises from the fact that in many cases the surplus funds provided out of revenue have been used in extension of works. In the case of private undertakings the capital expenditure is less than the capital raised. This is explained by the fact that private undertakings employ part of the capital raised in providing working capital.

## K—ASSETS AND LIABILITIES.

(See following page.)

[1] The loans raised include the value of the annuities capitalized at 25 years purchase only.

[2] In all instances the capital outlay is stated at the original cost except in the cases of Birmingham and Manchester, where the values are those after deducting depreciation.

[3] The loans raised include the annuities capitalized at the face value of the stock in the old company.

[4] This amount does not include £77,471, part of premium on redemption of annuities charged to sinking fund.

[5] This sum includes the par value only of the irredeemable stock. (See K 6.)

## K 1. Summary of balance sheet.

| *Assets and Outlay.* | *Birmingham.* | *Glasgow.* | *Manchester.* | *Leicester.* | *London—So. M.* | *Newcastle.* | *Sheffield.* |
|---|---|---|---|---|---|---|---|
| Capital outlay | £2,566,904 | £3,592,728 | £2,506,136 | £1,001,633 | £4,865,143 | £1,941,504 | £961,882 |
| Other assets | 976,974 | 213,852 | 350,328 | 302,400 | 1,107,441 | 180,179 | 302,926 |
| Premiums and bonuses | ..... | 251,782 | ..... | 256,651 | 3,048,891 | 433,129 | ..... |
| Total | £3,543,878 | £4,058,362 | £2,856,464 | £1,560,684 | £9,021,475 | £2,554,812 | £1,264,808 |
| *Liabilities and Funds.* | *Birmingham.* | *Glasgow.* | *Manchester.* | *Leicester.* | *London—So. M.* | *Newcastle.* | *Sheffield.* |
| Capital stock | ..... | ..... | ..... | ..... | £6,250,000 | £1,886,059 | £868,482 |
| Loan debt secured | £2,242,388 | £1,948,856 | £1,245,816 | £1,095,801 | 1,895,445 | 406,025 | 50,000 |
| Other liabilities | 465,869 | 175,037 | 134,493 | 89,109 | 566,891 | 185,191 | 155,800 |
| Surplus and funds | 835,621 | 1,934,469 | 1,476,155 | 375,774 | 309,139 | 77,537 | 190,526 |
| Total | £3,543,878 | £4,058,362 | £2,856,464 | £1,560,684 | £9,021,475 | £2,554,812 | £1,264,808 |

## K 2. Assets and Outlay Further Analysed.

| *Assets and Outlay.* | *Birmingham.* | *Glasgow.* | *Manchester.* | *Leicester.* | *London—So. M.* | *Newcastle.* | *Sheffield.* |
|---|---|---|---|---|---|---|---|
| *Capital Outlay:* | | | | | | | |
| Parliamentary expense | ..... | ..... | ..... | £22,310 | Note (1) | £18,831 | Note (1) |
| Works and plant | £2,566,904 | £3,592,728 | £2,506,136 | 979,323 | £4,865,143 | 1,922,673 | £961,882 |
| *Other Assets:* | | | | | | | |
| Accounts due | 255,190 | 130,078 | 160,279 | 62,350 | 428,450 | 142,257 | 115,341 |
| Stocks on hand | 180,930 | 54,202 | 119,484 | 76,298 | 383,306 | 37,922 | 42,602 |
| Cash | 350,321 | ..... | 41,155 | 432 | 47,928 | ..... | 58,135 |
| Investments of funds | 123,473 | ..... | ..... | 8,000 | 247,757 | ..... | 86,848 |
| Sinking fund | 67,060 | 29,572 | 29,410 | 155,320 | ..... | ..... | ..... |
| *Premiums upon purchase and bonuses* | ..... | 251,782 | ..... | 256,651 | 3,048,891 | 433,129 | ..... |
| Total | £3,543,878 | £4,058,362 | £2,856,464 | £1,560,684 | £9,021,475 | £2,554,812 | £1,264,808 |

[1] The item "Works and Plant" probably contains expenditures for Parliamentary costs.

K 3. Analyses of special items where possible.

In some cases it is impossible to obtain any detailed analysis except as to works undertaken by the municipality. This difficulty arises from the fact that the municipality has purchased from the private company at a lump sum, and also in the case of private undertakings that they have purchased from other companies or have been formed by the amalgamation of two or more companies.

*Birmingham.* "Capital Outlay" is composed of:

| | |
|---|---|
| Land (works and offices) | £269,415 |
| Buildings, plant, machinery, gas holders, etc. | 1,735,215 |
| Street mains and service pipes | 341,970 |
| Meters | 220,304 |
| | £2,566,904 |

The whole amount of Parliamentary expenses has been written off against surplus profits in previous years.

"Accounts due" is made up of:

| | |
|---|---|
| Gas and fittings | £181,638 |
| Coke and residuals | 20,882 |
| Sick fund | 305 |
| Sundry accounts | 52,365 |
| | £255,190 |

The "sinking fund" unapplied is in respect of annuities only. It is credited with the installments out of revenue and debited with annuities redeemed, including the premiums paid above 25 years' purchase, at which figure they are included in the liabilities of the plant.

*Glasgow.* "Capital Outlay" is made up of:

| | |
|---|---|
| Original cost of stations and works, including land | £2,076,356 |
| Land at Pollokshaws | 1,764 |
| Property in Partick | 4,231 |
| Workshops, Sterling Street | 32,436 |
| Offices, Virginia Street | 9,726 |
| Chemical Works | 111,826 |
| Workmen's dwellings, Dawsholm | 4,396 |
| Pipes and cost of laying | 788,064 |
| Gas meters | 471,545 |
| Gas stoves, etc. | 91,212 |
| Counting House furniture | 1,172 |
| Total | £3,592,728 |

The assets do not include any figure in respect to Parliamentary expenses. They have been charged against the profit and loss accounts as follows: 1870, £14,480; 1871, £630; 1891, £597; 1891, expenses of Boundary Commission, £3,105; total, £18,812.

*Manchester.* "Capital Outlay" is composed of:

| | |
|---|---|
| Land | £53,078 |
| Buildings | 500,341 |
| Manufacturing equipment and holders | 714,843 |
| Street mains and service pipes | 629,691 |
| Meters | 273,878 |
| Stove show room and cottages | 19,993 |
| Gas stoves, etc. | 114,312 |
| | £2,506,136 |

*Leicester.* "Capital Outlay" is composed of the following:

| | |
|---|---|
| Land, Thurmaston | £26,469 |
| New town offices | 19,272 |
| New town workshops | 2,652 |
| Meters | 139,919 |
| Aylestone Road works | 415,659 |
| Belgrave Gate works, etc. | 375,352 |
| | £979,323 |

"Parliamentary Expenses" includes expenses of conversion of 4 per cent debenture stock in 1884 of £10,755.

*London—So. M.* "Investments":—

| | | |
|---|---|---|
| Reserve fund | £174,305 | |
| Of which there is still to be invested | 73,932 | |
| Now invested | | £100,373 |
| Renewal fund | 23,962 | |
| Amount uninvested | 2,525 | |
| Invested | | 21,437 |
| Insurance fund | 105,189 | |
| Less amount uninvested | 3,382 | |
| Amount invested | | £101,807 |

The Monazite Sand Suspense Account amounts to £24,140—the cost of property in the United States which has been worked by the company to obtain material for making incandescent gas mantles. The directors give full particulars of this investment in their report of June, 1905.

"Accounts Due" is made up of:

| | |
|---|---|
| Gas meter and stove rental for last quarter of year | £301,550 |
| Arrears outstanding | 1,266 |
| Maintenance of lamps, etc. | 10,369 |
| Coke and other residual sales | 40,111 |
| Sundry accounts | 9,051 |
| Deferred payment purchases of gas fittings and appliances | 53,912 |
| Alterations of street lamps | 1,678 |
| Hire purchase appliances | 10,513 |
| | £428,450 |

Under the Act of 1896 the 10 per cent capital stock of the company was converted into 4 per cent stock, and the nominal amount increased by ..... £3,285,000

Under the same Act the 5 per cent debenture stock was converted into 3 per cent stock and the nominal amount increased by ..... 566,666

This amount of ..... £3,851,666

was added to the assets side of the balance sheet, although not represented by any actual asset.

As against this item the company has received premiums as follows:

| | | |
|---|---|---|
| On share capital ..... | £556,858 | |
| On debentures ..... | 245,917 | 802,775 |

Leaving a balance of ..... £3,048,891

which is the amount appearing as owing to share and loan holders which has not been paid for in cash. We have included this amount on the assets side of the balance sheet, after the actual assets.

*Newcastle.* "Capital Outlay" equals:

| | |
|---|---|
| Land ..... | £95,617 |
| Buildings, holders, plants, etc..... | 836,275 |
| Mains, services and lamps..... | 755,978 |
| Meters, ordinary ..... | 60,406 |
| Meters, prepayment ..... | 69,796 |
| Cooking stoves, ordinary ..... | 37,406 |
| Cooking stoves, prepayment ..... | 56,434 |
| Gas fires ..... | 761 |
| Parliamentary charges ..... | 13,347 |
| Expenses issuing stocks ..... | 1,355 |
| Capital duty ..... | 4,129 |
| Redheugh Bridge Co. ..... | 10,000 |
| | £1,941,504 |

The company owns one-half of the capital of the Redheugh Bridge Co., the remainder being held by the water company.

On the conversion of the ordinary share capital under the Act of 1901 from 7 to 3½ per cent, the nominal capital issued was increased by the sum of £777,571. Against this the company has issued shares and debenture stock at premiums amounting in the whole to £393,013, reducing the amount to £384,558. To this sum should be added £48,571, issued at time of consolidation in 1873, making in all £433,129. This amount is included in the assets; but it is not represented by any actual asset except the profit earning capacity of the works as a going concern.

The above amount of premiums, £393,013, is not a liability of the company repayable to those persons who paid it. It is not entitled to dividend. In the case of a winding up of the company, it would be represented by the general surplus assets of the company and be distributed *pro rata* among the whole of the shareholders.

"Accounts Due" is composed of:

| | |
|---|---|
| Gas rentals | £86,183 |
| Residuals | 24,179 |
| Meters, etc. | 24,171 |
| Street lighting | 3,866 |
| Fittings, etc. | 3,858 |
| | £142,257 |

K 4. Do the values above given represent the original cost of the present assets, their present market value, or cost of duplication? State how values were fixed.

*Birmingham.* Their present book value. The value of buildings, plant, machinery and gas holders is depreciated each year and the values reviewed from time to time. In this connection it is important to trace the exact procedure with regard to depreciation and valuations:

| | |
|---|---|
| The total expenditure to March 31, 1904, was | £2,553,763 |
| The outlay for year ending March 31, 1905 | 74,373 |
| | £2,628,136 |

There was deducted in 1904-5:

| | |
|---|---|
| "Buildings and plant abandoned, plant transferred to stock, etc." | 61,232 |
| Leaving balance at March 31, 1905 | £2,566,904 |

This deduction of £61,232 being a credit to capital outlay should be debited to either revenue or reserve fund, but it does not appear separately in either account. It is included in the items of maintenance in the revenue account.

*Glasgow.* Original cost. The depreciation written off is included in the liabilities as a credit to the depreciation fund.

*Manchester.* Original cost, less depreciation charged off until 1891; since then original cost.

*Leicester.* Above values represent original cost except gas stoves, etc., which have been depreciated.

*London—So. M., Sheffield.* Original cost, except meters and stoves which have been depreciated.

*Newcastle.* Original cost.

## K 5. Liabilities and Funds Further Analyzed.

| | *Birmingham.* | *Glasgow.* | *Manchester.* | *Leicester.* | *London—So. M.* | *Newcastle.* | *Sheffield.* |
|---|---|---|---|---|---|---|---|
| *Capital Stock* | ..... | ..... | ..... | ..... | £6,350,000 | £1,886,059 | £868,483 |
| *Loan Debt Secured* | £2,242,388 | £1,948,856 | £1,245,816 | £1,095,801 | 1,895,445 | 406,025 | 50,000 |
| *Other Liabilities:* | | | | | | | |
| Loans unsecured | ..... | 102,000 | ..... | ..... | 170,000 | 43,291 | ..... |
| Bank overdraft | 297,910 | 2,411 | ..... | 15,969 | ..... | 63,686 | ..... |
| Consumers' deposits | ..... | 34,528 | 54,744 | 1,197 | 21,548 | ..... | ..... |
| Sundry creditors | 167,959 | 36,098 | 79,749 | 71,943 | 375,343 | 78,214 | 155,800 |
| *Surplus and Funds:* | | | | | | | |
| Loan debt repaid | 666,561 | 517,925 | 1,201,814 | 89,158 | ..... | ..... | ..... |
| Capital outlay out of revenue | ..... | ..... | 97,323 | ..... | ..... | ..... | ..... |
| Sinking fund unapplied | 67,060 | 29,572 | 29,410 | 155,321 | ..... | ..... | ..... |
| Depreciation fund | ..... | 1,346,657 | ..... | ..... | ..... | ..... | ..... |
| Contingent fund | 2,000 | 19,289 | ..... | ..... | ..... | ..... | ..... |
| Reserve fund | 100,000 | ..... | 147,608 | 87,828 | 174,305 | 60,000 | 86,848 |
| Insurance fund | ..... | ..... | ..... | ..... | 105,189 | ..... | ..... |
| Leasehold renewal fund | ..... | ..... | ..... | ..... | 23,962 | ..... | ..... |
| Premiums received on shares | ..... | ..... | ..... | ..... | ..... | ..... | 19,706 |
| Profit and loss balance | ..... | 21,026 | ..... | 43,467 | 5,683 | 17,537 | 83,972 |
| Total | £3,543,878 | £4,058,362 | £2,856,464 | £1,560,684 | £9,021,475 | £2,554,813 | £1,264,808 |
| Estimated Liabilities not included in above | 348,560 | 409,265 | 92,029 | ..... | ..... | ..... | ..... |
| Profit in aid of rate since commencement | 1,225,836 | 21,235 | 2,689,302 | 581,301 | ..... | ..... | ..... |

K 6. Special items analyzed where possible. (See also I 27, 28.)

*Municipalities.* Three of the four plants had bank overdrafts. This might appear misleading unless attention is drawn to the fact that in two of these cases the municipality had cash to its credit in the bank on other accounts, and that the subdivision was merely an accounting convenience in order to keep each fund distinct. These overdrafts were as follows:—

| | *—Overdraft on—* | | *Set off against cash in bank.* | |
|---|---|---|---|---|
| *Town.* | *Capital Account.* | *Revenue Account.* | *On what Account* | *Amount.* |
| Birmingham ... | ..... | £297,910 | Capital | £344,609 |
| Glasgow ..... | ..... | 2,411 | Sinking Fund | 29,572 |
| Leicester ..... | ..... | 15,969 | ..... | ..... |

*Birmingham.* For analysis of loan debt, see inquiry J 4. The liabilities in respect of annuities should be increased by any premium which may have to be paid, above 25 years' purchase, on redemption of the above annuities. We estimate this at £348,560.

"Sundry Creditors" (£167,959) is composed of:

| | |
|---|---|
| Capital Account ..... | £2,564 |
| Revenue Account ..... | 70,210 |
| City, in aid of Rate..... | 50,526 |
| Superannuation Special Account..... | 25,959 |
| Interest accrued ..... | 5,622 |
| Annuities accrued ..... | 13,078 |

The sinking fund (£67,060) is invested as follows:

| | |
|---|---|
| Croydon Municipal Stock—3 per cent..... | £9,566 |
| Leeds " " —3 per cent..... | 9,350 |
| Bristol " " —3 per cent..... | 7,874 |
| Reading " " —3 per cent..... | 14,270 |
| Indian Government 3 per cent Stock..... | 9,938 |
| Balance in hands of city treasurer..... | 16,062 |

This amount is in respect of annuities only. The whole of the sinking fund set aside in respect of mortgages and stock has been applied in the extinction of debt. The secretary of the undertaking informs us that the statutes governing the plant give the municipality the very exceptional period of 80 years in which to repay the loan debt. It is obvious that this period is very much in excess of the possible life of any gas plant. The municipality have adopted this view and is setting aside out of revenue such annual instalments as will repay the loan debt in 33 1-3 years instead of in 80 years, thus bringing their practice in line with the more recent obligations imposed by statute upon other municipalities. This excess provision is sufficient to satisfy the Local Government Board that the municipality is justified in charging against the sinking fund actually provided out of revenue, the premiums paid on redemption of annuities above 25 years purchase (at which rate they are included in the liabilities of the undertaking). We have gone very carefully into the matter and

are satisfied that the municipalities have complied with their statutory obligations as to sinking funds, which have been approved by the Local Government Board.

*Glasgow.* The amount of loan debt secured—£1,948,856—includes only the face value of the securities. On a 3 per cent basis, the liability would be increased £409,265.

The item of £517,925 represents the actual amount redeemed out of sinking fund, but £77,471 were used to pay premiums on annuities redeemed, so that loans actually retired amounted to £440,454. The city has set aside more than the amount required by statutes—in several years as much as 5 per cent.

*Manchester.* The loan debt outstanding is made up of:

| | | |
|---|---|---|
| Loans | £789,469 | |
| Consolidated stock, 4 per cent | 430,991 | |
| Consolidated stock, 3 per cent | 25,356 | £1,245,816 |

The 4 per cent is irredeemable and is quoted at a premium. As the sinking fund is calculated on the nominal amount of the stock only, the premiums on stock redeemed are not provided for by the sinking fund but will have to be met out of future revenue. This will involve a liability estimated at £92,029, which is not included in the above amount.

"Sundry Creditors" is made up of: Interest accrued, £16,009; and unpaid accounts, £63,740; total, £79,749.

*Leicester.* "Sundry creditors" (£71,943) is composed of:

| | |
|---|---|
| Tradesmen | £39,817 |
| Workmen's saving fund | 13,997 |
| Accrued interest | 18,129 |

*London—So. M.* "Sundry creditors" is composed of items:—

| | |
|---|---|
| Unpaid interest | £27,010 |
| Sundry creditors (mdse. accounts) | 77,843 |
| Dividend account outstanding | 2,053 |
| Dividend to December 31, 1905 | 171,875 |
| Debenture interest to December 31, 1905 | 22 |
| Workmen's bonus and saving fund | 65,597 |
| Officers' superannuation funds | 30,943 |

*Newcastle.* Deposits were deducted from accounts owing. "Sundry creditors" (£78,214) is made up of:

| | |
|---|---|
| Tradesmen | £31,090 |
| Unpaid dividends | 40,374 |
| Interest | 6,750 |

*Sheffield.* "Sundry creditors" (£155,800) is equal to:

| | |
|---|---|
| Tradesmen | £108,073 |
| Accrued interest | 1,000 |
| Unpaid dividends | 46,727 |

L 1. Summary.

| *Revenue Account.* | *Birmingham.* | *Glasgow.* | *Manchester.* | *Leicester.* | *London—So. M.* | *Newcastle.* | *Sheffield.* |
|---|---|---|---|---|---|---|---|
| Income | £873,489 | £800,177 | £686,726 | £282,599 | £1,798,668 | £369,705 | £343,569 |
| Expenditures | 660,066 | 620,412 | 485,673 | 169,452 | 1,333,937 | 251,866 | 225,545 |
| Gross profit carried to profit and loss account. | £213,423 | £179,765 | £201,053 | £113,147 | £464,731 | £117,839 | £118,024 |

L 2. Revenue account—credits.

| *Income.* | *Birmingham.* | *Glasgow.* | *Manchester.* | *Leicester.* | *London—So. M.* | *Newcastle.* | *Sheffield.* |
|---|---|---|---|---|---|---|---|
| Sales of gas | £669,161 | £602,188 | £568,887 | £217,949 | £1,195,433 | £247,669 | £205,000 |
| Sales of residuals | 197,184 | 186,041 | 117,396 | 59,631 | 483,123 | 96,127 | 119,383 |
| Rents, meters, stoves, etc. | 3,165 | 7,784 | ..... | 3,038 | 116,616 | 23,900 | 16,110 |
| Rents, property | ..... | 3,723 | 443 | 921 | 3,314 | 1,432 | 225 |
| Profit, fittings | 3,971 | ..... | ..... | 1,060 | ..... | ..... | 1,696 |
| Transfer fees | 8 | 7 | ..... | ..... | 182 | 40 | 31 |
| Other receipts | ..... | 434 | ..... | ..... | ..... | 537 | 1,124 |
| Total | £873,489 | £800,177 | £686,726 | £282,599 | £1,798,668 | £369,705 | £343,569 |

L 3. Income further analysed.

| | *Birmingham.* | *Glasgow.* | *Manchester.* | *Leicester.* | *London—So. M.* | *Newcastle.* | *Sheffield.* |
|---|---|---|---|---|---|---|---|
| Gas—Ordinary meters | [1] £653,601 | £602,188 | £466,513 | [2] £143,942 | £1,165,850 | £231,066 | £192,971 |
| Gas—Prepayments | | | 54,550 | [3] 63,451 | | | |
| Gas—Public lighting | 15,560 | | 47,824 | 10,556 | 29,583 | 16,603 | 12,029 |
| Coke and breeze[4] | 111,913 | 67,792 | 60,604 | 30,054 | 295,523 | 62,287 | 63,813 |
| Tar[4] | 35,406 | 118,249 | 20,736 | 29,577 | 70,856 | 11,699 | 21,590 |
| Ammoniacal liquor[4] | 49,782 | | 35,869 | | 116,744 | 22,141 | 33,728 |
| Other residuals | 83 | ..... | 187 | ..... | ..... | ..... | 252 |
| Rent of meters | ..... | ..... | ..... | 10 | 64,448 | 15,034 | 16,110 |
| Rent of stoves | 3,165 | 7,784 | ..... | 3,028 | 52,168 | 8,658 | |
| Rent of other apparatus | ..... | ..... | ..... | ..... | ..... | 208 | ..... |
| Rent of property | ..... | 3,723 | 443 | 921 | 3,314 | 1,432 | 225 |
| Net profit on sales of fittings, etc. | 3,971 | ..... | ..... | [5] 1,060 | ..... | ..... | 1,696 |
| Transfer fees | 8 | 7 | ..... | ..... | 182 | 40 | 31 |
| Other receipts | ..... | [6] 434 | ..... | ..... | ..... | [6] 537 | [7] 1,124 |
| Total | £873,489 | £800,177 | £686,726 | £282,599 | £1,798,668 | £369,705 | £343,569 |

L 4. Revenue account.—Debits.

| *Expenditures* | *Birmingham.* | *Glasgow.* | *Manchester.* | *Leicester.* |
|---|---|---|---|---|
| Manufacturing expenses. | £594,792 | £524,196 | £358,372 | £134,398 |
| Distribution expenses... | 50,671 | 73,157 | 101,996 | 27,579 |
| General expenses..... | 14,603 | 23,059 | 25,305 | 7,475 |
| Total ..... | £660,066 | £620,412 | £485,673 | £169,452 |

| | *London—So. M.* | *Newcastle.* | *Sheffield.* |
|---|---|---|---|
| Manufacturing expenses..... | £1,019,371 | £203,931 | £183,650 |
| Distributing expenses..... | 188,070 | 28,662 | 27,051 |
| General expenses..... | 126,496 | 19,273 | 14,844 |
| Total ..... | £1,333,937 | £251,866 | £225,545 |

The following notes are to Table L 3 on p. 242:

[1] This item is made up as follows:

| | | |
|---|---|---|
| 2,700,450,900 cu. ft. at 2/6..... | | £337,556 |
| 1,398,129,200 cu. ft. at 2/3 ..... | | 157,290 |
| 1,164,060,600 cu. ft. at 2/0..... | | 116,406 |
| 722,101,200 cu. ft. at 1/10..... | | 66,193 |
| | | £677,445 |
| Deduct: Adjustment of stock..... | 725 | |
| Discounts and adjustments..... | 23,119 | 23,844 |
| Net total..... | | £653,601 |

Those paying 1/10 per M. cu. ft. consumed over 1,000,000 cu. ft. per quarter or used gas for power; the others used it only for lighting and less than 1,000,000 cu. ft. per quarter.

[2] After deducting labor and cartage.

[3] The gas sold for lighting was as follows:

| | | |
|---|---|---|
| 1,005,828,700 cu. ft. at 2/4 ..... | £117,346 | |
| 15,859,500 cu. ft. at 2/8 ..... | 2,114 | |
| 19,383,200 cu. ft. at 3/0 ..... | 2,907 | £122,367 |
| The sales for power were: | | |
| 115,628,800 cu. ft. at 1/6 ..... | £8,672 | |
| 2,038,100 cu. ft. at 1/10..... | 186 | |
| 117,324,700 cu. ft. at 2/0..... | 11,732 | |
| 3,313,900 cu. ft. at 2/2 ..... | 334 | |
| 1,824,500 cu. ft. at 2/4 ..... | 212 | |
| 3,283,900 cu. ft. at 2/8 ..... | 436 | £21,572 |

[4] The receipts from prepayment meters were:

| | | |
|---|---|---|
| 437,829,800 cu. ft. at 2/9 1-3..... | £60,810 | |
| 5,312,400 cu. ft. at 3/1 ..... | 818 | |
| 10,416,300 cu. ft. at 3/6 ..... | 1,823 | £63,451 |

[5] No stoves were sold. This item includes the profit on setting meters and on other work in consumers' houses beyond meter.

[6] Dividends from Redheugh Bridge Co.

[7] Hire of railway wagons. [8] Sale of waste lime.

L 5. Expenditures further analysed.

| | *Birmingham.* | *Glasgow.* | *Manchester.* | *Leicester.* | *London—So. M.* | *Newcastle.* | *Sheffield.* |
|---|---|---|---|---|---|---|---|
| *Manufacturing:—* | | | | | | | |
| Coal, fuel, oil, enrichers and other supplies | £328,321 | £348,597 | £253,992 | £86,924 | £649,775 | £123,259 | £94,535 |
| Salaries of engineers and officers at works | 7,487 | 4,682 | 4,527 | 2,532 | 24,567 | 5,059 | 3,414 |
| Manufacturing wages | 69,827 | 85,871 | 73,455 | 19,427 | 119,587 | 35,709 | 28,810 |
| Purifying supplies and wages | 25,608 | 32,108 | 9,281 | 2,731 | 37,725 | 9,732 | 5,073 |
| Maintenance, repairs, renewals | 166,244 | 46,843 | 17,117 | 22,784 | 187,717 | 30,172 | 51,818 |
| Other expenses | ..... | 6,095 | ..... | ..... | ..... | ..... | ..... |
| Less discount on purchases[1] | *2,695* | ... | ..... | ..... | ..... | ..... | ..... |
| *Distribution:—* | | | | | | | |
| Wages | 16,990 | 15,383 | 26,831 | 6,984 | 32,832 | 8,729 | 6,322 |
| Maintenance, repairs, renewals. | | | | | | | |
| Mains and services | 25,058 | 32,752 | 18,809 | | 60,564 | 10,908 | 10,371 |
| Meters | 5,328 | 17,556 | 40,826 | 20,595 | 47,834 | 3,574 | 10,358 |
| Stoves and appliances | ..... | 7,466 | 15,530 | | 38,389 | 4,151 | |
| Public lamps | 3,295[2] | ..... | ..... | ..... | 1,883[2] | 1,162[2] | ..... |
| Gas fitting | ..... | ..... | ..... | ..... | 6,568 | 138 | ..... |
| *General:—* | | | | | | | |
| Directors' allowances | ..... | ..... | ..... | ..... | 4,914 | 2,000 | 2,000 |
| Salaries of officers, etc. | 4,847 | 7,948 | 14,021 | 3,180 | 31,709 | 7,636 | 7,397 |
| Superannuation schemes, etc. | 4,130 | 1,296 | 1,039 | ..... | 12,861 | 110 | 1,690 |
| Copartnership charges | ..... | ..... | ..... | ..... | 42,092 | ..... | ..... |
| Auditing | 84 | 120 | ..... | 80 | 832 | 200 | 150 |
| Bad debts | 725 | ..... | 876 | 380 | 3,284 | 1,115 | 1,019 |
| Legal expenses | 96 | 209 | 227 | ..... | 7,551 | 127 | 268 |
| Injuries, damages and claims | ..... | ..... | 86 | ..... | ..... | 166 | ..... |
| Insurance—fire, boiler and accident | ..... | ..... | 95 | ..... | ..... | 728 | ..... |
| Rents | 425 | 8,484 | 2,620 | ..... | 1,960 | 835 | 309 |
| Office expenses and management ch'g's. | 4,296 | 5,002 | 4,451 | 3,835 | 20,993 | 6,166 | 2,011 |
| Other expenses | ..... | ..... | 1,890 | ..... | 300 | 190 | ..... |
| Total | £660,066 | £620,412 | £485,673 | £169,452 | £1,333,937 | £251,866 | £225,545 |

M 1. Gross profits—credits.

| | Birmingham. | Glasgow. | Manchester. | Leicester. | London—So. M. | Newcastle. | Sheffield. |
|---|---|---|---|---|---|---|---|
| Balance from revenue account | £213,423 | £179,765 | £201,053 | £113,147 | £464,731 | £117,839 | £118,024 |
| Interest on: | | | | | | | |
| Reserve fund and investments | 1,320 | ..... | ..... | 266 | 391 | ..... | 2,669 |
| Bank balance | | ..... | 1,321 | ..... | ..... | ..... | 157 |
| Charged to other departments | ..... | ..... | ..... | 1,173 | ..... | ..... | ..... |
| Total | £214,743 | £179,765 | £202,374 | £114,586 | £465,122 | £117,839 | £120,850 |

M 2. Gross profits—debits.

| | Birmingham. | Glasgow. | Manchester. | Leicester. | London—So. M. | Newcastle. | Sheffield. |
|---|---|---|---|---|---|---|---|
| Dividends on share capital | ..... | ..... | ..... | ..... | 343,750 | 78,911 | 86,848 |
| Interest on loan debt, annuities | £85,049 | £91,693 | £43,179 | £37,470 | £56,393 | £13,500 | £2,000 |
| Interest on: | | | | | | | |
| Bank overdraft | ..... | ..... | ..... | 1,100 | ..... | ..... | ..... |
| Deposits, etc. | ..... | ..... | 1,601 | 581 | 8,751 | 3,437 | ..... |
| Sinking fund installments | 37,584 | 31,734 | 43,814 | 14,527 | ..... | ..... | ..... |
| Rates and taxes | 40,584 | 32,194 | 47,712 | 17,441 | 80,255 | 18,119 | 18,082 |
| Balance of net profit carried to profits disposal account | 51,526 | 24,144 | 66,068 | 43,467 | *24,027* | 3,872 | 13,920 |
| Totals | £214,743 | £179,765 | £202,374 | £114,586 | £465,122 | £117,839 | £120,850 |

The following notes are to L 5 on page 244:

[1] This is treated as an item of receipt in the published accounts. It has in this schedule been deducted from the manufacturing costs, but strictly should have been divided and part deducted from the other operating expenses of distribution.

[2] Cost in excess of amount received from the local authorities for maintenance.

[3] Expenses for operation of street lamps, including repairs.

M 3. Disposal of net profit.

| | *Birmingham.* | *Glasgow.* | *Manchester.* | *Leicester.* | *London—So. M.* | *Newcastle.* | *Sheffield.* |
|---|---|---|---|---|---|---|---|
| Net profit for the year.. | £51,526 | £24,144 | £66,068 | £43,467 | £24,027[2] | £3,872 | £13,920 |
| Amount transferred from credit balance of profit and loss account of previous year ..... | ..... | 12,055[1] | ..... | ..... | 24,027 | ..... | ..... |
| Total..... | £51,526 | £36,199 | £66,068 | £43,467 | ..... | £3,872 | £13,920 |
| Depreciation fund[3]..... | ..... | £36,199 | ..... | ..... | ..... | ..... | ..... |
| Reserve fund ..... | £1,000[4] | ..... | £1,614 | ..... | ..... | ..... | ..... |
| Premium on cancelled stock ..... | ..... | ..... | 3,131 | ..... | ..... | ..... | ..... |
| Extension and new works | ..... | ..... | 1,323 | ..... | ..... | ..... | ..... |
| Profit applied in aid of rate ..... | 50,526 | ..... | 60,000 | £43,467 | ..... | ..... | ..... |
| Amount added to profit and loss account for the year ..... | ..... | ..... | ..... | ..... | ..... | £3,872 | £13,920 |
| Total ..... | £51,526 | £36,199 | £66,068 | £43,467 | ..... | £3,872 | £13,920 |
| Making the credit balance in profit and loss at the end of the year. | ..... | £21,025 | ..... | ..... | £5,683 | £17,537 | £83,972 |

[1] The credit balance of the profit and loss account at the end of the year 1903-4 in Glasgow was £33,081. In order that £36,199 might be put in the depreciation fund, this balance was lowered by £12,055, leaving it £21,025 at the end of 1904-5.

[2] In the case of the South Metropolitan, the credit balance of the profit and loss account was reduced by £24,027 in order that the dividends might be paid.

[3] See inquiry I 27 in this connection.

[4] Contingency Fund—Forged Transfers Act, 1891.

M 4. Analysis of special items.

*Glasgow.* Since 1876 the city has had no power to spend profit in aid of rates (see inquiry D 15), but the following amounts have been paid to the city for specific purposes:

| | |
|---|---|
| 1881 | £5,000 |
| 1883 | 6,000 |
| 1884 | 333 |
| 1886 | 5,000 |
| 1889 | 3,000 |
| 1890 | 2,000 |

Since 1900 no part of the profits of the undertaking has been applied to the general purposes of the corporation.

*London—S. M.* Since December, 1901, under the company's special act of 1900, the standard dividend has been 4 per cent, and the standard price 3s. 1d. per 1,000 feet, with an increase of dividend of 2s. 8d. per cent for every reduction in the price of gas. The following table shows the price of gas and the corresponding dividends to which the shareholders would be entitled:

| *Price of Gas.* | *Dividend Authorized.* |
|---|---|
| 3s. 1d. | £4— 0—0 |
| 2s. 8d. | 4—13—4 |
| 2s. 4d. | 5— 4—0 |
| 2s. 3d. | 5— 6—8 |
| 2s. 1d. | 5—12—0 |
| 2s. 0d. | 5—14—8 |

The company has not always paid the full dividend to which it is entitled, as appears by the following table, which shows each half year from 1901 to 1905 the amount the company was entitled to pay and the amount actually paid:—

| *Date.* | *Price of Gas.* | *Dividend.* | |
|---|---|---|---|
| | | *Payable.* | *Paid.* |
| 1901—June | 2s. 8d. | £5— 0—0 | £5— 0—0 |
| December | 2s. 8d. | 5— 0—0 | 5— 0—0 |
| 1902—June | 2s. 3d. | 5— 6—8 | 5— 6—8 |
| December | 2s. 3d. | 5— 6—8 | 5— 6—8 |
| 1903—June | 2s. 3d. | 5— 6—8 | 5— 6—8 |
| December | 2s. 3d. | 5— 6—8 | 5— 6—8 |
| 1904—June | 2s. 1d. | 5—12—0 | 5—10—0 |
| December | 2s. 0d. | 5—14—8 | 5—10—0 |
| 1905—June | 2s. 0d. | 5—14—8 | 5—10—0 |
| December | 2s. 0d. | 5—14—8 | 5—10—0 |

The dividends paid in 1905 were free of income tax; that is, the income tax had been paid and included in the item of "taxes" in the accounts.

*Sheffield.* The dividends of £86,848 included income taxes of £6,052; that is, the shareholders received net £80,796. This amount of £6,052 is *not* included in the item of "taxes" in the above accounts.

# GENERAL HISTORY AND LEGISLATION

## British Electricity Supply Works

## (Schedule I)

By MILO R. MALTBIE

*Sources:* As Schedule I. relates principally to the statutory and legal provisions affecting the undertakings examined, the most important sources are the acts of Parliament and judicial decisions. Of almost equal value are the Sessional Papers, especially in those instances where special reports have been made by select committees of Parliament, and where the evidence has been printed in full (London principally). Occasionally a verbatim report of the proceedings before a Parliamentary committee when a private bill affecting the undertaking, usually for the grant of powers or the extension of capital, may be found, but ordinarily no record is kept, and when printed they are issued by the city or the company itself.

The records, reports and documents of the city department or of the company, as the case may be, often contain much of value, especially those issued when the undertaking was started or when changes in management were actually made or mooted. In the case of municipal plants or when a transfer of the undertaking from the company to the city is being considered, the council minutes are useful.

The principal secondary sources which are of such high standing as to be recognized as authentic in every respect, are:

Hudson, editor: "The Manchester Municipal Code." 6 vols.

Hope: "Handbook compiled for the Congress of the Royal Institute of Public Health" (Liverpool).

Bell and Paton: "Glasgow: Its Municipal Organization and Administration."

Corporation of Glasgow: "Handbook on the Municipal Enterprises."

Garcke: "Manual of Electrical Undertakings and Directory of Officials." 10 vols.

Rawlinson & Johnston: "The Municipal Corporations Acts and other Enactments ....." 9th Edition.

The Electrician: "Electrical Trades' Directory and Handbook." 24th year.

Will: "The Law Relating to Electric Lighting, Traction and Power." 3d Edition.

In each town, there is usually a considerable amount of pamphlet and periodical literature which throws some light upon the situation.

To supplement the data obtained from the above sources, interviews were had with the principal city officials, officers of the companies, American consuls, and citizens connected in no way with the company or the municipality.

**Principal Acts of General Application.**

Companies Clauses Consolidation Acts, 1845-1889.
Companies Acts, 1862-1900.
Lands Clauses Consolidation Acts, 1845-1895.
Borough Funds Act, 1872, c. 91.
Local Loans Act, 1875, c. 83.
Public Health Act, 1875, c. 55.
Municipal Corporations Act, 1882, c. 50.
Employers' Liability Act, 1880, c. 42.
Local Government Act, 1888, c. 41.
Workmen's Compensation Acts, 1897, c. 37, and 1900.
Electric Lighting Acts, 1882, c. 56; 1888, c. 12; 1899, c. 19.
Electric Lighting (Scotland) Acts, 1890, c. 13; 1902, c. 35.

**Acts Applicable to London Only.**

London Overhead Wires Act, 1891, c. LXXVII.
London Government Act, 1899, c. 14.
Metropolitan Superannuation Act, 1866, c. XXXI.

**Individual Undertakings.**

*Manchester* Electric Lighting Orders, 1890 and 1896.
Manchester Corporation (General Powers) Act, 1897, c. CCXLI; 1902, c. CXXXVIII.
*Liverpool* Electric Lighting Order, 1896, c. XII.
Liverpool Corporation Loans Act, 1894.
Liverpool Corporation Act, 1893.
Liverpool Improvement Act, 1882.
*Glasgow* Corporation Electric Lighting Orders, 1890; 1902, c. CLXXXVI; 1905, c. CXII.
Glasgow Corporation (Gas and Water) Act, 1899, c. CLXII.
Glasgow Corporation (Gas, etc.) Order, 1902, c. CLXXXV.
*St. Pancras* (Middlesex) Electric Lighting Order, 1883, c. CCXIX.
*Newcastle*-upon-Tyne Electric *Supply* Company's License, 1890.
Newcastle-upon-Tyne Electric Lighting Order, 1893.
Gosforth Extension Electric Lighting Order, 1900.
Walker & Wallsend Union Gas Company's (Electric Lighting) Act, 1899.
Walker & Wallsend Union Gas Company's (Electricity Capital) Act, 1900.
Newcastle-upon-Tyne Electric Supply Company's Acts, 1900, 1902, 1903.

*Newcastle*-upon-Tyne [*District*] Electric Lighting Order, 1891, c. CVI.
Newburn Electric Lighting Order, 1902.
*City of London* Electric Lighting (Brush) Orders, 1890, c. CCXXXIX; 1891, c. CCXII.
City of London (East District) Electric Lighting Order, 1890, c. CCXXXIX.
Southwark Electric Lighting Order, 1891, c. LXV.
City of London Electric Lighting Acts, 1893, c. LXXXV; 1900, c. LXXXVIII.
City of London Sewers Act, 1848, c. CXXXIII.
*Westminster* Electric Lighting Orders, 1889, 1891.
*St. James* Electric Lighting Order, 1890, c. CXCIV.
St. James & Pall Mall Electric Light Company's Act, 1899, c.
*Central* Electrical Supply Company's Acts, 1899, c. LXXXVIII; 1905, c. CLXXV.

## A—HISTORICAL AND GENERAL.

A 1. Date when this undertaking began to sell electricity.

A 2. If it is a municipal plant, was current being supplied by a private company when city began operation?

A 3. Character of *original* organization, whether individual, firm, corporation, municipal or other form.

A 4. Character of *present* organization, whether individual, firm, corporation, municipal or other form.

| *Municipalities.* | *Date of Supply.* | *Date of Municipalization.* |
|---|---|---|
| Manchester | July, 1893 | From origin. |
| Liverpool | 1888[1] | July 1, 1896. |
| Glasgow | 1890[2] | March 1, 1892. |
| St. Pancras | November, 1891 | From origin. |

| *Companies.* | |
|---|---|
| Newcastle—Supply[3] | January, 1890 |
| Newcastle—District[3] | January, 1890 |
| London—City[3] | December, 1891 |
| Westminster | November, 1890 |
| St. James | April, 1889 |
| Central | Does not distribute current. |

[1] As will be seen in the answers to inquiries A 5-8, the city had power to experiment with electric lighting as far back as 1879, and a private company tried to operate in 1884, but not until 1888 was a general supply begun.

[2] Current was being supplied to a few consumers prior to 1890, but without legal authority. See inquiries A 5-8 below.

[3] These words will be used throughout the following pages to distinguish respectively the Newcastle-upon-Tyne Electric Supply Company Limited, the Newcastle and District Electric Lighting Company Limited, and the City of London Electric Lighting Company Limited.

A 5. Give date and character of changes in ownership since origin.
A 6. State method of making each change.
A 7. State terms of each arrangement.
A 8. State fuly reasons for each change.

*Manchester.* Apparently neither the municipality nor a private company had seriously proposed to establish an electric lighting plant in Manchester prior to 1881, when the Gas Committee of the council determined to apply to Parliament for authority to erect a generating station and to lay mains in certain streets. Their application was, however, denied at the instance of the President of the Board of Trade, on the ground that no authority should be granted by special act prior to the passage of a general law which he intended to introduce into Parliament. After the enactment of this measure in 1882, the City Council unanimously resolved, upon October 25, to apply to the Board of Trade for a provisional order authorizing the establishment of a municipal plant. The draft of the order prepared by the city officials was not acceptable to the Board of Trade, and the conditions which it insisted upon were not considered by Manchester reasonable and proper. The consequent deadlock resulted in the defeat of the proposal.

Within the next few years practically nothing was accomplished. The Board of Trade did not seem willing to recede from its position, and the city council was equally determined. No private company came forward with a proposal to supply the city, and nothing was done until 1889, when six companies gave notice to the council, as required by the statute, of their intention to apply to the Board of Trade for the necessary authority to supply current. In the mean time, the gas committee, which still had charge of the matter, had been considering the advisability of making another attempt to secure powers, and finally recommended that a special meeting of the council be called to consider the matter. This was done and upon August 7, 1889, by a vote of 56 to 0, the council decided to promote a provisional order. The following year it was issued by the Board of Trade and approved by Parliament. As it is still in force with certain amendments made in 1896, its provisions will be found in the following pages.

For the first few years the undertaking was managed by the gas committee, but in 1897 it had grown to be so large, and separate control seemed so advisable, that a separate committee was appointed under whose management it is at the present time.

*Liverpool.* Electric lighting was first considered by the city in 1878, when the city engineer was asked to report upon the advisability of lighting the public streets by this method. The following year an act was obtained authorizing the city to carry on experiments for a period of five years. Practically nothing was accomplished, and no attempt being made to have it renewed, the act expired in 1884.

In the meantime, bids for lighting certain public places were called for, and a private company undertook to supply current on

a very modest scale in 1884; but the company could not make it go and soon ceased operations. Nothing further seems to have been done in a definite way and with any success until 1888, when the Liverpool Electric Supply Company, Ltd., obtained a license from the Board of Trade, with the consent of the City of Liverpool, to supply electricity for a period of six years. The following year this company obtained Parliamentary powers by a provisional order, which provided among other things that the city might purchase the system at the end of twenty-one years, from August 12, 1889. Further powers were secured in 1891, 1892 and 1895, and the purchase clauses so amended as to enable the city to take over the undertaking as a "going concern" on June 20, 1898, or of any subsequent year, provided that notice of the intended purchase were given between twelve and eighteen months before that date, or forty-two years from 1891, without any allowance for compulsory purchase, good will, etc. A subsequent change, due to the extension of the city boundaries, was made fixing the earliest date at which the city might purchase at June 30, 1900.

In November, 1894, the question of municipalization came up and was so favorably considered that a committee of the city council was appointed to confer with the company regarding purchase in 1895 instead of waiting until 1900. The company expressed a willingness to consider the matter, and early in 1895 a resolution was introduced in the city council providing for the purchase of the undertaking upon such terms as could be agreed upon between the private company and a committee of the council, or, failing agreement, by arbitration. This resolution was adopted by a vote of 29 to 13. Although the terms exacted by the company from the city were considered rather hard, an agreement was finally reached, embodied in a bill and enacted by Parliament, to take effect July 1, 1896. It provided for the transfer of all the powers, property and assets of the company to the city, except the reserve and renewal fund amounting to £18,000. In return, the city was to pay £400,000 and to take over every employee upon the same terms and at the same salary as in force January 1, 1896.

Apparently no inventory nor appraisal were made of the property transferred, but the financial statement for the year ending December 31, 1895, was as follows:

General Balance Sheet.

DR.

| | |
|---|---|
| To capital account | £120,000 |
| " depreciation fund account | 34,316 |
| " renewal fund account | 2,532 |
| " net revenue account | 15,451 |
| " general funds of the company | 92,412 |
| Total | £264,711 |

CR.

| | |
|---|---|
| By lands, including law charges | £25,197 |
| " buildings | 23,439 |
| " plant and machinery | 54,368 |
| " accumulators | 7,959 |
| " mains | 130,379 |
| " meters, etc | 12,470 |
| " provisional orders | 1,746 |
| " instruments | 2,778 |
| " general stores | 637 |
| " purchase of patents, etc | 493 |
| " special items | 5,245 |
| Total | £264,711 |

Assuming that the then structural value of the plant was worth all it originally cost—£265,000—the city paid £135,000 as a premium. *Traction and Transmission*, a technical journal, stated in 1901 that the bonus amounted to £150,000 and that shares having a face value of £5 had been selling at about £8 4s., 64 per cent. above par. In view of the fact that the rate of dividend was limited to 6 per cent., that all above this amount had to go to the city, and that the previous dividends had been 3½ per cent. for 1890, 4½ per cent., 1891; 5 per cent., 1892 and 1893; 5½ per cent., 1894, the city evidently was made to pay all the undertaking was worth in the market, and possibly more.

In view of the fact that the city could purchase in 1900, what were the reasons for taking it over in 1896? In the first place, it is to be noted that the basis of valuation in 1900 was as a "going concern," and it is very likely that the market value of the undertaking would have been demanded by the company then, and possibly awarded by the arbitrators. Further, as the time went on, the rights might increase in value and a larger sum would have to be paid. Immediate purchase seemed wise, therefore, upon the assumption that the system ought to be taken over within any reasonable time.

The principal reasons for municipalization seem to have been the desire to secure for the city the profits of the undertaking, the difficulties which the city had experienced in trying to get the gas company to give better service at lower rates, the desire to have in its own hands an alternative system of lighting which it could use for the streets and also as a leverage for a reduction in the rates of gas, and the general feeling that the public should control the streets and all services using them. A programme had been framed for the acquisition of the electric, gas and tramway undertakings, and this was the first move in the scheme. Apparently there were no more than the usual number of complaints regarding the character of the service or the prices charged. The average rate paid in 1895, including meter rents, was 7.1d. per Board of Trade unit—k. w. h.

In 1902 Liverpool acquired the Electric Lighting Order for Allerton, Woolton and Childwall, small suburban districts formerly outside of the city but now within its boundaries, and the undertaking of the Garston and District Electric Supply Company, Limited, operating in an area annexed to the city in that year. The former was obtained, of course, at practically no expense, no plant having been constructed. The latter was a small company with a paid-up capital of only £10,007.

*Glasgow.* Although a few electric light plants for private supply had previously been installed, no definite move for a general supply was made before 1882, when it was proposed to secure Parliamentary powers to establish a municipal plant. This project came to naught, and neither the city nor a company attempted to secure statutory powers until 1890. In the meantime, the company of Muir, Mavor and Coulson, Limited, had laid down a plant to supply the post office and gradually added one consumer after another until there were thirty-seven, all good consumers, taking considerable current. Having no right to break up the streets, the current was conveyed by overhead wires, strung from one building to another in the very small district supplied.

In 1890, the company and the city each applied to the Board of Trade for a provisional order authorizing a general supply. The former shortly withdrew its application, and an agreement was made with the city council for the purchase of its plant for £15,000. The application of the city was granted, and upon March 1, 1892, the city took over the plant of the company. Meanwhile the construction of a general system had been begun—a low-tension, continuous-current, three-wire system of 200 volts pressure, upon the advice of Lord Kelvin, to save the cost of altering consumers' installations. Since 1893, when the new works were opened, the consumption has increased by leaps and bounds. Upon May 31 of that year, the total number of consumers was 108; in 1905, 11,643. The current generated grew in the same period from 408,529 to 21,584,088 units.

About the same time that the city started its undertaking, a company was projected in Kelvinside, a suburban town to the west of Glasgow and outside its boundaries. It was not considered likely that in the near future the city plant would reach out that far, but by 1899 the situation had changed. The tramways had been municipalized, were being electrified, and were reaching out in every direction. If powers were sought to supply the tramways in Kelvinside with electricity from the city's undertaking, the grant would be opposed by the company, and this opposition might be sufficient to cause the rejection of the application. Then, too, Kelvinside was now a part of Glasgow, and to leave this small company in a part of its area would prevent the most economical development of the undertaking. An agreement was made with the company and approved by Parliament in 1899. The amount paid was £37,000, distributed as follows:

| | |
|---|---|
| Buildings | £6,916 |
| Machinery and plant | 10,116 |

| | |
|---|---|
| Mains | 16,965 |
| Meters | 841 |
| Accumulators | 2,068 |
| Electrical instruments | 41 |
| Furniture | 53 |
| Total | £37,000 |

Probably the city paid in each case about the structural value of the plants.

In 1902, the Kinning Park Electric Light Order was transferred to Glasgow, but as this local authority had not started to carry out its powers, there was no plant to transfer.

The reasons for the establishment of a municipal electric lighting plant are easily stated. In the first place, one needs to read the history of the transfer of the gas works (see inquiries A 5-8 under Gas), and see how difficult it was for the city to control these companies and what large sums had to be paid, over and above the value of the plants, to acquire the properties. The citizens of Glasgow thought that they might easily be obliged to pass through another such experience if they allowed private electric companies to get a foothold. They also believed that the municipalization of the gas works had proved very beneficial, and the question naturally arose whether similar results would not follow the establishment of municipal electric lighting. Further, the feeling was growing that any undertaking requiring the use of the subsoil of the streets and in the nature of a monopoly should be in the hands of the municipality.

*St. Pancras.* The vestry of St. Pancras was the first public body in London to obtain power to construct an electric lighting plant and to supply current for commercial as well as public lighting. No change has been made in the control of the undertaking except the change made necessary by the Act of 1899, which substituted the borough council for the vestry, when London was divided into twenty-eight boroughs and a multitude of small authorities abolished.

*Newcastle—Supply.* This undertaking has been in the hands of a limited liability company from its origin to the present. For three years it operated under a license, but in 1893 and later secured provisional orders and acts of Parliament. Purchase by the municipality was considered in 1895, and Professor A. B. W. Kennedy was appointed by the town to report upon the advisability of doing so. He recommended that it be not done, as the rates were low in his opinion, as there was a competing company to be purchased which would make municipalization expensive, and as the saving to the city would not be large under the circumstances.

*Newcastle—District.* This company is also a limited liability company and has been so from the beginning. Under an agreement with the Board of Trade and the municipality, the laying of mains was begun in 1889, and a supply of current furnished in

January, 1890. A license was first granted by the Board of Trade, superseded by a provisional order in 1891. While this investigation is being made (spring, 1906), municipalization is being considered by the city and the company. No definite agreement has yet been made public if any has been reached.

*London—City.* The Commissioners of Sewers—the local authority in the City of London, having jurisdiction over matters relating to public lighting prior to 1898—had considered the question of lighting the City by electricity for many years, and in 1889 decided to divide the City into three districts—west, center and east—and to invite bids for the privilege of supplying current, thus securing competition if possible. Two of these districts—west and center—were finally awarded to the Brush Electrical Engineering Company, Limited, and the eastern district to the Laing, Wharton and Down Construction Syndicate, Limited. As neither company could break up the streets to lay mains without authorization from the Board of Trade or Parliament, applications were made to the Board of Trade for provisional orders enacting these agreements. Approval was given by Parliament in 1890, and work began very shortly thereafter.

Most of the provisions of these agreements are still in force and are given in the subsequent pages, but a few need special notice here. The agreements between the Commissioners of Sewers and the companies contained a provision by which the former granted to the latter "so far as they were able to do so," the exclusive right of supplying electricity for private purposes within their respective areas, but this was never incorporated in an act of Parliament. (This clause played an important part later when competing companies applied for powers. See inquiries A 14-15.) In return, the companies agreed to the right of purchase by the public in twenty-four years, a sliding scale for prices so that the price would be reduced as dividends increased above 10 per cent., and the setting aside annually of 7½ per cent. of the capital for depreciation, and 5 per cent. for a reserve until this fund should reach one-fourth of the capital expended. The orders also provided that the companies might transfer their rights and properties to a new company having no powers to supply energy within the County of London except in the City, with the consent of the local authority and the Board of Trade.

In 1891 the Brush company obtained statutory powers for the supply of electricity in the area of the St. Saviour's District Board of Works, Southwark, south of the Thames and beyond the boundaries of the City of London. Another order relative to certain small areas in the City was also obtained by the company the same year.

The two companies to whom these four orders were given were principally construction companies and probably had no intention of operating the undertakings. Their chief aim was to secure the contracts for equipment. Closely following upon the completion of the agreements, the City of London (Pioneer) Electric Lighting

Company, Limited, was formed to give the necessary financial assistance to the contractors. In 1891 the City of London Electric Lighting Company, Limited, was formed and to it were transferred all the assets of the Pioneer company in return for a payment of £95,000, of which £25,000 were a bonus to the shareholders for the risk they had run.

The statutory powers under the orders of 1890 and 1891 were likewise transferred with the consent of the Board of Trade and the local authorities. The clauses relating to the sliding scale for prices and dividends, and to depreciation and reserve funds were too crudely drawn to be satisfactory, and an act passed in 1893 undertook to remedy the defects by defining capital expenditures in some detail, by allowing the company to charge against the depreciation fund all expenditures for maintenance and renewals, and by permitting the reserve fund to be used for any purpose except the equalization of dividends. These amendments did not improve matters, and in 1900 all the provisions regarding depreciation and reserve funds were repealed.

Municipalization has been proposed and discussed from time to time, especially in 1899, when there were many complaints of inefficiency of the service and of high charges, and when a competing company was authorized to lay mains throughout the City chiefly because of the numerous complaints. Since then one of the chief objections to municipalization has been the great cost which the purchase of the duplicate systems of the competing companies would involve. Of recent years the relations between the company and the City Corporation, which succeeded to the powers of the Commissioners of Sewers, abolished in 1897, have not been entirely amicable. In the early years of the company the relations were very close, so close, indeed, that two of the contracts for public lighting were declared null and void by the courts. The facts brought forth in the litigation and in the reports made by agents of the central government were as follows:

When the contracts for street lighting were made between the local authority and the Brush company for the western and central districts, several suspicious circumstances caused public comment. Nothing definite was ever established except that commissioners of sewers and city councillors and aldermen were shareholders in the private company, and that even the lord mayor held stock. It was also shown that after the signing of the contract with the L. W. & D. syndicate and the transfer of the powers of the construction company, commissioners and councilmen were stockholders in the new company. These facts were first brought out authoritatively by a report to the Board of Trade in 1899, when the opinion was expressed that these facts made the contracts illegal under section 42 of the City of London Sewers Act of 1848, which provided that no person being a commissioner, councillor or alderman of the City should be directly or indirectly interested in any contract with the local authority upon pain of having such contract declared null and void and himself fined £100.

No move was made to invalidate the contracts, however, until a few years later, when disagreements arose between the company and the City Corporation and suit was brought to have the contracts annulled. The case was finally carried to the House of Lords, and a decision rendered in 1903 which declared null and void the two contracts for the western and central districts and upheld the legality of the one for the eastern district. The distinction made was that in the former case, shareholders were members of the local authorities at the time the contracts were made, a condition clearly prohibited by the Act of 1848; while in the latter case, there was no such illegal condition at the time the contract was made. Hence this contract was legal at the time of making, and the fact that commissioners or councilmen became shareholders afterwards did not invalidate it, as such status was not prohibited by the Act of 1848. The eastern contract is still in force although the City has tried to get rid of it.

*Westminster, St. James and Central Companies.* Each company is organized under the Companies Acts and its liability is limited. There has never been any definite plan for municipalization. The Central company is a supply company; it does not distribute current except to the Westminster and St. James companies, which take its entire output and control all of the share capital equally between them. The debenture stock is largely held by outsiders.

This status grew out of the need of these two companies for additional plant. Each had about reached its maximum output and could not increase its plant without great expense for land. Each occupied an area where real estate was so valuable that a new site could be secured elsewhere at a much lower cost. Each did not need a large additional supply immediately, and it was evident that one central station could supply their needs much more cheaply than two separate stations; also, their districts were contiguous. It was finally agreed, therefore, to apply to Parliament for powers to build a plant outside of their areas, where land was cheap, to own it jointly and to charge each company for current as nearly as possible at cost. It is because of this intimate relation with the St. James and Westminster companies that the Central company is included in this investigation. No survey of their activities could be complete without it.

A 9. Has there ever been municipal ownership and private operation of plant? No.

A 10. Is the general sentiment favorable or unfavorable to the present system of ownership and operation?

Generally favorable in every case. The only instance where a change is definitely being considered is at Newcastle, where a plan for the purchase of the District company is under discussion. There seems to be more friction between the local authorities and the company in the City of London than elsewhere.

A 11. What is the attitude of the press?

*Municipalities.* Generally favorable, although in every town there is a portion of the press which opposes municipal trading and which watches the undertaking closely.

*Companies.* Generally favorable. There is more or less talk about municipalization, but it is not due specially to the delinquencies of the companies.

A 12. State current objections to present system.

*Manchester, Liverpool.* None, except an occasional charge that due economy is not practiced and that depreciation is not adequately provided for.

*Glasgow.* The engineer says:

"Objections put forward by financial operators and company promoters are that the citizens are made to pay a higher price for current than they would if the undertaking were in the hands of a company, in that

"(a) a municipality pays higher wages to its employees than a company would do, owing to the voting power of the working classes, and

"(b) owing to the facilities for obtaining loans, capital is recklessly expended and there is consequently a higher sum to pay for interest, sinking fund and other standing charges. It is further asserted that notwithstanding these high charges, municipalities do not write enough off their capital accounts or set aside a sufficient sum to meet the depreciation and obsoletion of their plant, as compared with what a company would do, and that consequently there is accumulating a big financial deficit or loss which has to be met in the future, and which, as the departments will then be quite unable to meet it, will entail an assessment on the then ratepayers.

"This argument is all bosh. An examination of the accounts of municipalities and companies shows that the companies' charges are higher and the sums set aside for depreciation are less than those set aside by municipalities; and in addition the municipalities set aside a sum as sinking fund on the capital expended on the undertaking, and are, therefore, repaying the capital in proportion to the depreciation going on, a thing which companies do not do."

*St. Pancras.* None could be found of any importance.

*Newcastle—Supply and District.* None, except small consumers think they should have lower rates and that the large ones are too low comparatively.

*London—City, Westminster and St. James.* The principal objection is that streets are torn up too frequently, due largely to the fact that there are two competing companies with mains in the same streets. In new streets, subways are laid and the wires placed therein, but this is too expensive when the streets have already been laid out, which is true of most of the highways, of course. House connections were often put in without due notice to the street authorities, it is claimed.

A 13. Do the citizens take an active interest in the management of the plant?

*Manchester, Liverpool.* Not much at present.

*Glasgow.* The works are open for inspection once a year and they are filled. Persons are shown about upon application, and many visit the plant.

*St. Pancras.* Seldom, unless something unusual arises.

*Companies.* No.

A 14. Have there ever been competing electric lighting companies in the city?

A 15. Are there competing companies now?

*Municipalities.* No.

*Newcastle—Supply and District.* These two companies were originally given precisely the same areas of supply, viz., the City of Newcastle. But before any large amount of work was done, an agreement was made whereby the District company was to confine itself to the western part of the city, and the Supply company to the eastern part. This agreement expired by limitation in 1905, but it is still observed, and there is, therefore, practically no duplication of mains or services. It is very unlikely that it could have been enforced if either company chose to disregard it, for authority to supply in Newcastle had been given by Parliament, and such right could not have been contracted away unless Parliament had also given the power to do so, which it has never done.

*London—City.* The City of London company has one competitor in all of its area of supply, and two competitors in a small part in the southeast of St. Saviour. There are two sets of mains in practically every street and a consumer may take current from either company. In Southwark (District of St. Saviour), there were two companies almost from the start. The London Electric Supply Corporation, Limited, secured powers in 1889, and the predecessor of the City of London company in 1891. In the City competition was not authorized by Parliament until 1899.

Competition in the Southwark area came about naturally from the provisions of the Act of 1888, which declared that any grant of authority to supply an area should not in any way hinder or restrict the granting of similar powers for the same area to any other company. In the discussions in Parliament and the inquiries made prior to the enactment of electric lighting legislation, the conflict between the advocates of high tension and low tension, and of direct and alternating current, had been very keen but indecisive. Parliament decided to let them fight it out in actual work and to allow the systems to exist side by side, firm in the opinion that the fitter would survive. When the predecessor of the City of London company—the Brush company—applied for powers in St. Saviour its application was granted, almost as a matter of course, even though one company was already supplying current.

Competition in the City came about from different reasons entirely. It has already been stated that when the agreements

were made by the local authorities with the construction companies, and provisional orders secured by the latter, the commissioners of sewers granted the companies the exclusive right of supplying electricity. But of course they had no legal authority to grant a monopoly, and any such agreement had no binding effect, certainly so far as Parliament or the Board of Trade was concerned. However, when three companies applied to the Board of Trade in 1899 for authority to supply electricity in the City, the local authority refused to give its consent, thereby keeping its part of the agreement even though *ultra vires*.

Under the Acts of 1882 and 1888, this refusal to give consent was not insuperable, but the Board of Trade had to make a special report stating its reasons for dispensing with local consent. At the inquiries held evidence was presented to show that the existing supply was inefficient and expensive, and that the purpose of the new companies was to give a cheaper and better supply. Complaints were made as to the failures of the supply, and memorials presented favoring the application of one company signed by over 9,000 ratepayers and others, and of another company with over 5,000 signatures. It was also shown that fines amounting to £200 per annum for the previous seven years had been deducted from the company's bills for defective public lighting. In answer, the City of London company claimed that the number of failures was relatively small and that it was unfair to allow a new company to come in and divide the business when a monopoly had been promised in return for valuable concessions. To this the City Corporation replied that counsel had advised that the old agreements were null and void because shareholders were members of the local authorities, contrary to law, when the agreements were made. The City did not take an active part in the inquiry either for or against the applications, except to declare that it preferred to be left to deal with the situation until it could arrange to take the supply into its own hands, and that competition would be productive of great inconvenience to the public through the continual breaking up of the streets.

While the inquiry was being conducted the City Corporation undertook to secure from the company some satisfactory settlement of the situation, a reduction in prices and improvements in the service. The company maintained that it was doing all it could do, that it had reduced prices from 7.56d. per unit in 1895 to 6.22d. in 1898, and that an immediate reduction to 5d. was impossible. Inasmuch as the Charing Cross company—one of the applicants for powers—had received less than 4.5d. per unit in 1898 and yet paid a dividend of 8 per cent. on the ordinary stock, this was not convincing.

The final result was that the Board of Trade granted one application, issuing an order authorizing the Charing Cross and Strand Electricity Supply Corporation, Limited, to supply current throughout the City. Mains have since been laid in nearly every street. Prices have been reduced, service improved and a greater

willingness to accommodate the consumer manifested. Upon the other hand, traffic has been interfered with more through the more frequent opening of the streets, capital has been wasted in the unnecessary duplication of plant and mains, and the cost of municipalization greatly increased. Sufficient time has not yet elapsed to demonstrate fully the wisdom or unwisdom of competition. There certainly was considerable immediate gain, but it remains to be seen whether in the long run losses will not more than equal the gains.

*Westminster, St. James.* The first company given powers to supply electricity in the present City of Westminster was the London Electric Supply Corporation, Limited, the first provisional order for which dates from 1889; but current had already been supplied for four years under a license from the Board of Trade. The system adopted was high pressure, alternating current with substations and house transformers. In 1889, 1890 and 1891 the Westminster and St. James companies applied for powers to supply in portions of the area already given to the London Supply company, and their requests were granted.

The reasons why competition was allowed are as follows: In the first place, the people were not at all satisfied with the prices and services given by the old company. Complaints were sometimes quite numerous. In the second place, the new companies proposed to adopt a different system of supply, viz., low pressure, continuous current and three wires. The force of this argument has been explained in connection with the City of London company in Southwark, above. Thirdly, the feeling seemed quite general that the system of regulation was not adequate to control the private company, and that the only satisfactory remedy was to introduce competing companies. Thus one portion was given to the Westminster company, another to the St. James, and other portions to other companies.

The immediate result, as in the City of London, was the lowering of prices and the improvement of the service. Upon the other hand, the more frequent tearing up of the streets has been a great source of inconvenience. Competition is wasteful and the present tendency is distinctly towards "districting," so that only one set of mains will be in any street. As a result not all of the streets have, or have had, duplicate mains and services.

The City of Westminster is supplied by some seven different companies. There are two competing companies in every part except one small district, and three companies in two small districts. This intermingling of areas and companies was the result of conditions existing prior to the creation of the City of Westminster in 1899. The present area was then governed by a number of local bodies which allowed different companies to come in, and no one ever got powers in all the districts.

*Central.* This is not a distributing company.

A 16. If private companies have been consolidated, give dates and methods briefly.

See answers to inquiries A 5-8.

A 17. Population of city at last national census, 1901.

A 18. Estimated population January 1, 1906, of area of supply.

| *Towns.* | *A* 17. | *A* 18. |
|---|---|---|
| Manchester (1) | 543,872 | 745,000 |
| Liverpool (2) | 648,958 | 760,000 |
| Glasgow (3) | 760,423 | 790,000 |
| St. Pancras (2) | 235,317 | 236,000 |
| Newcastle—Supply (4) | 215,328 | 955,000 |
| Newcastle—District (5) | 215,328 | 270,000 |
| London—City (6) | 50,242 | 47,400 |
| Westminster (7) | 128,025 | 123,000 |
| St. James (7) | 21,588 | 20,600 |
| Central | Does not distribute. | |

A 19. Are there gas works which compete with electricity?

A 20. Were these public or private?

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(1) The Manchester undertaking has very recently obtained powers to supply the districts of seven local authorities outside the city boundaries, having at present an estimated population of 115,000.

(2) Liverpool and St. Pancras have no authority to go outside their own areas. Figures are for the Borough of St. Pancras; the population is stationary and the boundaries have been unchanged since 1901.

(3) For the period under consideration Glasgow had no powers to supply outside of its area, but in February, 1906, the Pollokshaws Electric Supply Order, 1905, was transferred to Glasgow by that burgh upon payment of Parliamentary expenses, £196, and subject to the agreement that prices in Pollokshaws shall not be more than in Glasgow.

(4) The Newcastle Supply Company has general powers of supply and distribution, obtained from Parliament, in several areas, having a total population in 1901 of 300,000 approximately, and at present about 335,000. It may lay through mains and supply in bulk to distributors in 16 other areas having a population in 1901 of 225,000, and at present upwards of 250,000. It also supplies the North Eastern Railway's suburban service in Northumberland County, and has power to supply to others at the boundaries of the above-mentioned districts. The "area of supply" is, therefore, a very indefinite term, but, including the districts and companies that may be supplied in bulk, it would include very nearly 1,000,000 people, of which over 700,000 are in areas outside of the City of Newcastle.

(5) The District company has powers to supply most of the present City of Newcastle, but only a small area beyond Newcastle, having about 15,000 population.

(6) The City of London company supplies the City of London and part of Southwark. The former had a night population—census—in 1901 of 26,923 (at present about 24,900) and a day population of over 300,000, it being the great office centre of the Metropolis. Southwark is more of a residential district, but largely devoted to factories, stores and offices.

(7) The Westminster and St. James companies supply most of the City of Westminster. The figures given are for the areas of supply. A large portion of each is devoted to offices and stores, so that the load is largely a day load, and the day population largely in excess of the night population—the census.

A 21. If private, were they owned or controlled by the same persons controlling electric works?

*Manchester, Glasgow.* Both the electric and gas plants are owned by the municipality, and there is keen competition between the two committees which administer them.

*Liverpool, St. Pancras.* The gas works are operated by a private company.

*Newcastle, London.* The gas works are privately owned in each case, but are not connected with any electric lighting company considered in this report.

**B—GENERAL FINANCIAL POWERS OF MUNICIPALITIES.**

B 1. Does city have power, for construction or acquisition of electric supply works, to raise money by issuing securities?

*Manchester, Liverpool.* Yes, but each new issue of securities must be approved by the Local Government Board.

*Glasgow.* The same is true of Glasgow, except that the Secretary for Scotland takes the place of the Local Government Board.

*St. Pancras.* Yes, but as the London boroughs borrow from the London county council, the requirements of this body must be met before any money will be handed over.

B 2. Does city have power, for construction or acquisition of electric supply works, to raise money by taxation?

Yes, authority to do so having been given by the Act of 1882. There is no limit to the amount that may be so raised except the general limits upon the amount of taxation.

B 3. Does the city have power to raise money by taxation to meet a deficit? If so, what statutory limit is fixed?

*Manchester, Liverpool, St. Pancras.* Yes. No limit.

*Glasgow.* Yes. The limit is 6d. in £1 of assessable value. Contributions may also be made from the "Common Good," but this fund receives nothing from taxes.

B 4. What is the limitation upon the general taxing power of the city?

*Manchester, Liverpool, St. Pancras.* None, except that no function may be exercised by the municipality, and no taxes levied for its exercise, which has not been conferred by Parliament.

*Glasgow.* Limits have been fixed for every purpose and these may not be exceeded.

B 5. State fully, step by step, the procedure which must be followed and the requirements which must be met before the city may construct or acquire a plant; also source of each provision, whether state constitution, statute or ordinance. Note particularly requirements as to initiation of proposal, special action by city authorities before its adoption, mayoralty veto, referendum, publicity, making of appro-

priations, bond issues and approval of scheme by courts or state authorities.

See inquiry B 5 under Gas. The summary there given applies here. A more complete discussion is given in the special report on franchise legislation.

## C—INCORPORATION OF COMPANIES.

C 1. Date of incorporation of company.

Newcastle-Supply, 1889; Newcastle-District, 1889; London-City, 1891; Westminster, 1888; St. James, 1888; Central, 1897.

C 2. Place of incorporation. London.

C 3. Was incorporation under general law, special act, administrative order or other method?

Under the Companies Acts, 1862 to 1893, which provide a general routine for the incorporation of any company.

C 4. For what length of time was incorporation to be effective?

As no limit was fixed in any act, it is in perpetuity, or until the company is wound up voluntarily or by act of Parliament.

C 5. If this duration has since been extended or decreased, state when, how, or for what period of time, and reasons therefor.

No change has been made in any case.

C 6. Was the power of amendment or alteration reserved to the state?

No power to amend or annul was expressly reserved, but Parliament has the power to do either at any time.

## D—PUBLIC SUPERVISION OF MUNICIPALITIES AND COMPANIES.

### General Powers.

D 1. Does municipality or company have power to condemn private plants under the right of eminent domain?

There is no general "right of eminent domain." Property may not be acquired otherwise than by agreement, except under authority of Parliament, given by private act or provisional order, and when powers of "compulsory purchase" are so conferred, Parliament amply protects vested rights. This applies to cities and companies alike.

D 2. Does municipality or company have power to purchase private plants?

*Municipalities.* There are no private plants (which distribute current) within the areas of supply. Every municipality has the power to purchase electrical machinery by agreement, but it cannot legally distribute current beyond its authorized area of supply and cannot, therefore, operate plants there even by agreement except when a transfer of powers has been made with the approval of the Board of Trade.

*Companies.* The statutory provisions regarding purchase by local authorities are given under inquiry D 8. Within the area of supply of every private company examined there is a competing company, but neither may transfer its undertaking to the other without the approval of the Board of Trade or Parliament. The rules against operations outside of the authorized areas apply alike to companies and municipalities.

D 3. Does the municipality or company have power to construct works upon its own property?

There is no such sweeping provision against the use of land, already acquired, for electric lighting purposes as in the case of gas works. Consequently, either a municipality or a company is free to erect a plant upon any land it owns, but neither has power to take land compulsorily without specific authorization from Parliament. Either may take land by agreement without statutory powers, but it is advisable to have statutory authority, for an action for nuisance committed upon lands specified in the acts of Parliament will not lie, unless it can be shown that such nuisance was caused by negligence, or unless the law fixes a liability. In absence of such statutory powers, it is not necessary to prove negligence.

D 4. Does the municipality or company have power to lay mains in the streets?

Yes; in the authorized areas of supply (see D 11). The restrictions are practically the same as for gas plants.

There are two distinct steps to be taken before streets may be opened. In the first place, authority to supply in the area must be obtained prom Parliament, and the acts and provisional orders usually contain a section which states that if the undertakers go outside of the authorized area, their powers may be revoked by the Board of Trade. In the second place, a permit must be obtained from the local authorities having charge of the streets, and it has the right to say when and how its streets may be opened.

D 5. Does the municipality or company have full powers of operation?

Yes. When municipalities took over the plants from private companies they took over all the powers previously held by these companies. Parliament has shown some reluctance to allow municipalities to do all the things it has authorized companies to do, e. g., manufacture fittings, but all the powers necessary to the manufacture, distribution and sale of electricity have been granted.

D 6. How were these powers conferred?

By general laws, special acts and provisional orders. See lists under *Sources.*

D 7. Explain system of taxation fully, including all payments to central and local authorities, fees, special assessments, etc.

See special report on this subject.

D 8. Give statutory provisions regarding purchase of plants by public authorities.

*Municipalities.* The undertakings are already in the hands of public authorities and none supplies outside of its own area except Manchester. This city was authorized by an act of Parliament to lease the undertakings of suburban local authorities or accept the transfer of their powers upon approval by the Board of Trade. Manchester has made agreements with seven authorities, each of which has been empowered to repurchase the undertaking, or the part thereof within its area, at the end of twenty-one years from the date of the agreement, ranging from 1897 to 1905, or of any period of five years thereafter, upon the terms and conditions prescribed in the Acts of 1882 and 1888, given below. It should be noted here that the electricity department of Manchester supplies power for the tramways, that the tramway department is operating lines within the areas of these same local authorities and that they have the right to purchase the tramway lines within their areas in case they do not own them or to resume control in case they do own them at the end of twenty-one years from the date of the agreement. Naturally the period of purchase should be the same for electricity supply works and tramways under such circumstances, although private electric companies have usually been given much longer terms.

*Companies.* The Act of 1882, which applied to all of Great Britain and Ireland, provided that the local authority, at the expiration of twenty-one years from the date of the grant, or at the expiration of every subsequent period of seven years, might purchase the undertaking compulsorily, or so much of it as was within its jurisdiction, upon the payment of the "then value of all lands, buildings, works, materials and plant of such undertakers suitable to and used by them for the purposes of their undertaking within such jurisdiction, such value to be, in case of difference, determined by arbitration; provided that the value of such lands, buildings, works, materials and plant shall be deemed to be their fair market value at the time of the purchase, due regard being had to the nature and the then condition of such buildings, works, materials and plant, and to the state of repair thereof [ ] and the suitability of the same to the purposes of the undertaking, and where part only of the undertaking is purchased, to any loss occasioned by severance, but without any addition in respect of compulsory purchase or of goodwill, or of any profits which may or might have been or be made from the undertaking, or of any similar considerations." The Act also provided that the property should be transferred to the local authority free from all debts, mortgages or similar obligations, and that all the powers exercised by the company should vest in the local authority.

The Act of 1888 amended the above provisions so as to insert in the quotation the words "and to the circumstances that they are in such a position as to be ready for immediate working," at the place noted by the brackets. The periods of purchase—twenty-

one years and every subsequent seven years—were changed to forty-two and ten years, respectively, and a proviso added that notice must be given to the company within six months after the expiration of any period.

The Act of 1888 also authorized the Board of Trade, through a provisional order confirmed by Parliament, to vary the above terms and conditions, but, except as noted in the following paragraphs regarding the companies examined, the provisions of the Act of 1882, as amended by the Act of 1888, apply in each instance.

*Newcastle—Supply.* This company has general powers of supply and distribution in six different local areas. The city of Newcastle may purchase the portion of the undertaking within most of its area, except the through lines not used for the supply of current within its boundaries, thirty-one years from July 3, 1891—July 3, 1922. The shortness of this term—eleven years less than fixed by the Act of 1888—was part of the price paid by the company for the withdrawal of the opposition of Newcastle to the granting of its provisional order. It may purchase the portion in Walker—a district formerly separate from Newcastle, but annexed in 1904—in 1943, or forty years from the date of the act of Parliament relative to this area. Otherwise, the Acts of 1882 and 1888 apply.

The Gosforth local authority may purchase in 1921 or 1930, in addition to 1942, and every ten years thereafter, powers for this area having been granted in 1900. If taken over in 1921, the payment shall be the amount of capital expended upon the portion of the undertaking in Gosforth; if in 1930, the value of the Gosforth part " as a going concern," the amount in each case to be determined by agreement, or, in default of agreement, by arbitration. These conditions also were accepted by the company in order to secure the consent of the local authorities of Gosforth.

The four other local authorities may purchase the portions in their areas, except the generating stations, according to the provisions of the general acts, the periods running in one instance from 1900, and in the other three from 1903.

The local authorities in the other areas in which power is supplied in bulk to distributors have no powers of purchase either under general or special acts.

*Newcastle—District.* This company has general powers of supply and distribution in most of Newcastle, Newburn and a few small areas of minor importance. The city of Newcastle may purchase thirty-one years from July 3, 1891—the same date, it should be noted, upon which the city may purchase the undertaking of the Newcastle Supply company. Newburn may purchase thirty-five years from 1902, or in 1937.

*London—City.* The City of London company supplies areas governed by two different authorities. In the City of London, the local authority may purchase twenty-four years from 1890. In

the case of the portion of the undertaking used for public purposes, the terms of the Acts of 1882 and 1888 shall apply. The price of the part used for private purposes is to be settled by agreement, or, failing that, by arbitration. In Southwark, the terms and conditions are those of the general acts, the periods running from August 26, 1889.

*Westminster, St. James.* As in the case of most of the London companies, the local authorities may purchase forty-two years from 1889 under the terms of the general acts.

*Central.* If, and whenever, the City of Westminster purchases the undertaking of the Westminster company or of the St. James company, or of both of them, it must also purchase the plant, mains, etc., of the Central company, subject to the terms and conditions of the general acts.

D 9. Give statutory provisions regarding condemnation of private plants by the city under power of eminent domain.

No such general right in English law, as explained under D 1.

**Character of Plant.**

D 10. Give statutory provisions regarding size and location of plant.

None, except that the land to be used is specified. See D 3.

D 11. Give statutory provisions regarding area to be served (see also A 17 and 18).

*Manchester.* The areas which may be supplied were defined in the provisional orders issued to Manchester and to the seven outside local authorities which have transferred their powers to Manchester recently.

*Liverpool.* The area fixed by law is the city of Liverpool. In 1897 authority was given to take over the provisional orders of adjoining districts with the approval of the Board of Trade. This has been done, as noted above under inquiries A 5-8, in two instances, the areas of each now being within the city boundaries.

*Glasgow.* The area fixed by statute is the city of Glasgow. The powers of the borough of Pollokshaws were transferred in 1906, but this transfer does not come within the period covered by these schedules.

*St. Pancras.* All of the borough.

*Newcastle—Supply.* This company has general powers of supply and distribution in Newcastle, Gosforth, Longbenton, Wallsend, Walker, Willington and Willington Quay. It has power to supply in bulk to authorized distributors, to lay through mains and to supply others on margin of areas in fifteen districts, and in Tynemouth with the consent of the municipality, and to supply the North Eastern Railway, the County of Durham Electric Power Supply Company and the County of Durham Electrical Power Distribution Company (one interest). It may also enter into

agreements, with the consent of the undertakers supplying current within the district, for the supply of energy beyond the authorized areas of supply in the county of Northumberland.

*Newcastle—District.* The authorized area of supply is the city of Newcastle as constituted in 1891, and the urban district of Newburn to the west. The directors of the company as individuals made an agreement with the council of Benwell and Fenham—a district between Newcastle and Newburn, now a part of Newcastle—to operate the council's system as if it were its own. This contract has been carried out by the District company, and although there may be some question as to its legality, it has been executed as if none existed. The district has since been added to Newcastle and the rights of the district council transferred to the city.

The agreement provides that the undertakers (the District company in practice) shall supply current through the distributing system owned by the council; shall lay all house services required by consumers; provide, install and keep in repair prepayment meters; rent motors, if required; place and maintain fittings, wiring and lamps at a cost not to exceed 6d. for each single incandescent lamp, or 1s. for three lamps in a cluster and 3d. for each additional lamp per year; maintain and repair the entire distributing system, including new extensions, house services and apparatus; keep its accounts so that the council may examine them at any time, and receive all payments for current, including meter rents. In return for these privileges, the undertakers agreed to pay the council annually 6 per cent. on the money borrowed to pay costs of provisional order, fees of engineer and expenses of building the distributing system, including the lines which shall be laid in the future as well as those already provided; to limit charges for current to the rates in vogue in Newcastle, and never to exceed 4d. per unit except in case of prepayment meters, the rate for which may reach 5½d; to supply street lighting at certain fixed rates varying from £12 to £18 per annum for each 600 Watt inclosed arc lamp, including maintenance, and from 17s. 6d. to £1 6s. per annum for each 16 candle-power incandescent lamp not consuming over 75 Watts per hour; to make certain specified minor payments to the council; and to transfer all house services, meters and other property on consumers' premises to the council at the end of the contract, upon receiving cost price less 5 per cent. for each year in use. The term of the contract was ten years from April 1, 1901.

*London—City.* The areas defined by the provisional orders are the City of London and the parishes of Christchurch and St. Saviour, south of the Thames in Southwark.

*Westminster.* The areas of authorized supply include the parishes of St. George, Hanover Square, and nearly all of St. Margaret and St. John, City of Westminster.

*St. James.* This company has power to supply the parish of St. James, Westminster.

*Central.* There is no area of supply fixed for this company. It has power to supply only the Westminster and St. James companies.

AREAS OF SUPPLY AND POPULATION (1).

| *Towns.* | *Total Area of Supply.* | *Area of Borough.* | *Area Without.* | *Total Pop.* | *Pop. of Borough.* | *Pop. Without.* |
|---|---|---|---|---|---|---|
| Manchester ..... | 34.7 | 21.5 | 13.2 | 745,000 | 630,000 | 115,000 |
| Liverpool .....The whole city | | | none | 760,000 | 760,000 | none |
| Glasgow .....The whole city | | | none | 790,000 | 790,000 | none |
| St. Pancras .... | 42.1 | 42.1 | none | 236,000 | 236,000 | none |
| New.-Supply ....[2] | 575 | 13.2 | 562 | 955,000 | 255,000 | 700,000 |
| New.-District .. | 19 | 13.2 | [3]7.5 | 270,000 | 255,000 | 15,000 |
| London-City ... | 1.38 | [4]1.05 | .33 | 47,400 | [5]24,900 | 22,500 |
| Westminster ... | 2.9 | 3.9 | none | 123,000 | 193,000 | none |
| St. James ..... | .25 | 3.9 | none | 20,600 | 193,000 | none |

Central does not distribute; only gives bulk supply.

PERCENTAGE OF AREA AND POPULATION OUTSIDE OF BOROUGHS.

| *Towns.* | | | | *Area, Per Cent.* | *Population, Per Cent.* | |
|---|---|---|---|---|---|---|
| Manchester ..... | | | | 38 | 15.4 | |
| Liverpool ..... | | | | .... | .... | |
| Glasgow ..... | | | | .... | .... | |
| St. Pancras ..... | 42.1 | 42.1 | none | 236,000 | 236,000 | none |
| New.-Supply ... | 575[2] | 13.2 | 562 | 955,000 | 255,000 | 700,000 |
| New.-District ... | 19 | 13.2 | 7.5[3] | 270,000 | 255,000 | 15,000 |
| London-City .... | 1.38 | 1.05[4] | .33 | 47,400 | 24,900[5] | 22,500 |
| Westminster .... | 2.9 | 3.9 | none | 123,000 | 193,000 | none |
| St. James..... | .25 | 3.9 | none | 20,600 | 193,000 | none |

Central does not distribute.

D 12. Give statutory provisions regarding nature of plant and equipment.

I. The Act of 1882, applicable to all undertakings unless expressly excepted or amended, provides that the Board of Trade may, from time to time, make, amend and repeal such regulations as it may think expedient for securing the safety of the public

(1) The population figures and certain of those for the areas supplied are estimated, but are probably very nearly accurate. "Area of supply" does not mean that mains are laid in every street, but that the undertaking has the *right* to supply in that area. The areas are in square miles.

(2) This figure is only an approximation. It includes 375 square miles in the county of Northumberland, part of which the company may only supply in bulk, and 200 square miles in Durham supplied by the Durham companies, but which have become practically one interest, and which the Newcastle company may, and does, supply in part.

(3) This company does not have the power to supply all of the present area of Newcastle.

(4) This is the area of City of London.

(5) This is the night population of the City of London.

from personal injury, or otherwise, and may amend and repeal any regulations contained in any license, order or special act in relation thereto. Such regulations have the full force and effect of Parliamentary enactments. It also may enact that lines may not be placed above ground except with the approval of the local authority.

II. The Act of 1882 further provides that the local authority within whose district electricity is supplied by a company may make additional regulations for securing the safety of the public, but no such regulation shall take effect until it has been confirmed by the Board of Trade.

III. The Act of 1899, applicable to all grants of powers after 1899 unless expressly excepted or amended, provides that current may be supplied only by means of some system approved in writing by the Board of Trade and subject to the Board of Trade regulations; that neither municipality nor company shall place any electric lines above ground, except upon its own property, without the express consent of the Board of Trade and of the local authority in case it is a company; that no part of the circuit shall be connected with the earth unless the connection is approved by the Board of Trade and the Postmaster General; that before any new work is begun in the streets, a notice shall be served upon the Postmaster General and the local authority describing the project with plans thereof and any other information that may be needed. If either disapproves, the company must adopt suggested changes or appeal to the Board of Trade, whose decision is final.

As to II., above, no by-laws have ever been made and sanctioned under this section. It may be disregarded, therefore.

As to I., the Board of Trade has exercised its powers fully, having issued, amended and rescinded many regulations. Those now in force, which apply alike to municipal and company plants in all essential matters, prescribe the pressure which may be supplied, and the conditions under which each kind of pressure—low, medium, high and extra high—may be used, including earth connections, fuses, switches, circuit breakers, etc.; how a three-wire system shall be introduced into consumers' premises; the minimum size of conductors; manner of testing; the kind and efficiency of insulation; the character of circuit breakers and transformers; the materials and construction of conduits, street boxes, etc.; the responsibility for lines on consumers' premises; the methods to prevent and to deal with leakages; height and guarding of arc lamps in the streets, etc. The regulations also require the undertakers to maintain a constant supply, to restrict the variation at the terminals in consumers' premises to 4 per cent. of the standard fixed, to notify the consumer what system of supply is to be adopted, and if alternating current, to fix the number of periods per second, to give at least one month's notice before making any change and then only when approved by the Board of Trade, etc. They also prohibit the erection of overhead lines,

except with the express approval of the Board of Trade and in accord with the plans approved by it. Penalties are fixed for each infringement of the rules.

As to III., the Act of 1899 does not apply except to those grants of powers made after 1899, but as it is the codification of the clauses ordinarily contained in private acts and provisional orders prior to that date, its provisions so far as given above apply to most of the undertakings treated here. Any modification will be noted, but unless so stated they are in force. Under the provisions quoted, the Board of Trade has issued an order which states what systems are approved by it, and if another is proposed, special consent must be had. The order applies, of course, to company and municipal undertakings alike.

Coming now to the special provisions which are not applicable to all plants:

*Manchester.* In the areas outside of the city, Manchester occupies the same position as regards these provisions that a company would if it had powers in these areas under the Acts of 1882 and 1899.

*St. Pancras.* The provisional order for this borough was issued in 1883, before the Board of Trade had had much experience and before a model form of grant had been worked out. It contains, therefore, some unusual clauses. It provided that electricity may be supplied by any of the following systems:

(a) The "parallel system"—a double series of mains, one positive and the other negative;

(b) The "series system"—a single circuit, where the whole current is utilized at various points and not divided among parallel circuits;

(c) Any other system approved by the Board of Trade; provided that no such system shall include any circuit to be connected with the earth, except as required by statute, unless approved by the Board of Trade with the concurrence of the Postmaster General.

As to street work, before work is begun notice must be served upon the Postmaster General and London County Council, describing the project with plan thereof and giving any other information that may be needed. If either disapproves, the borough must adopt the suggestion made or appeal to the Board of Trade, and its decision is final.

The Board of Trade must approve the style of mains, services, safety fuses, poles upon consumers' premises, lightning dischargers, materials for insulation, earth connections, etc. Mains and services must be insulated, cut-offs placed outside of premises, safety fuses fixed to break the current when 50 per cent. greater than intended, positive and negative poles placed at least 3 inches apart in consumers' premises, maximum current at a pair of poles limited to 50 amperes, except as approved by the Board of Trade, etc.—matters now ordinarily left to regulation by the Board of Trade and not put in the provisional order.

The actual "pressure"—the difference in potential at corresponding points of the positive and negative mains—must never vary more than 5 per cent. from the standard, which shall be not less than 30 nor more 200 volts for continuous currents, and not less than 50 nor more 100 volts for alternating currents; but the Board of Trade may alter these limits. The difference of potential at any two charging points shall not exceed 4,000 volts. The number of alternations per minute shall not be less than 600 or such number as fixed by the Board of Trade. Current through service lines shall not exceed 1,000 amperes if such current exceeds 10 amperes, or 2,000 amperes if it is less than 10 amperes, per square inch of copper wire of a conductivity equal to that of the conductor.

The Act of 1899 does not apply.

*Newcastle—Supply.* In the case of through mains for power or bulk supply, their location must be approved by the local authority, subject to appeal to the Board of Trade.

*London—City.* Wires may not be placed overhead in the City, but may be permitted in Southwark with the consent of the county council and the Board of Trade. If the local authority or the county council provides subways in the streets where lines are to be laid, the company may be required to put its lines therein and to pay a reasonable rental therefor. In Southwark only continuous current shall be used, except with approval of the Board of Trade.

*Westminster, St. James.* These companies are required to put their lines in subways and to pay a reasonable rent for the use, if the local authority provides them in streets where lines are to be laid.

*Central.* This company has not been authorized to erect overhead lines, so that even with the consent of the local authority it cannot do so. All must be placed under ground.

D 13. Give statutory provisions regarding extension of mains.

I. In every instance, except the Central Company, the municipality or company was required by the act granting powers to lay mains in certain specified streets, usually a few in number at the start, within a certain prescribed period, usually two years from the date of the grant, but the Board of Trade was given power to extend this period if it saw fit. The Newcastle Supply company was allowed only eighteen months in part of its area, and where it supplies in bulk and does not distribute generally, there is no requirement to lay any mains. The City of London company was given twenty-one months in the City, but the local authority might extend the period with the approval of the Board of Trade.

II. It is also true, except of the Central company, that the undertakers must serve notice at least twenty-eight days in advance upon the owners and occupiers of abutting property and upon the local authority, if it is a company plant, when a line for a particular consumer is to be laid, and if two or more consumers request, a main for general distribution must be provided.

III. Undertakers must lay mains in any street or part thereof within six months after being requisitioned to do so by six owners or occupiers, or, if it is a company plant, by the local authority. The undertakers may require these prospective consumers to contract to take a supply for three years, amounting to not more than 20 per cent. annually of the cost of laying the mains. The Board of Trade may increase this maximum percentage if it sees fit. If the undertaker is a company and the requisition is from the local authority, the authority may be required to take supply for lamps in that street or part thereof for three years.

The only modifications of this rule are the following: In St. Pancras the requisition must be signed by the owners or occupiers of not less than one-fourth of the premises along the street or part thereof. The rule does not apply to the Newcastle Supply company in the areas where it only supplies in bulk or to authorized distributors. In Southwark only *two* owners or occupiers need sign a requisition, and a contract may not be required for more than *two* years. The same applies to the Westminster and St. James companies. The Central company is exempt entirely.

IV. Another requirement, generally applicable, except to the Central company, is that the undertakers may be required by any prospective consumer to supply him with current if his premises are within 50 yards of a main for general supply, but he may be called upon to pay for all lines upon private property and also over 60 feet from the main, to sign a contract to take supply for two years equivalent in amount annually to 20 per cent. of the cost of the lines to be laid, and to give security for payment.

The only variations from the general application of this rule are: In Liverpool and St. Pancras, the premises must be within 25 yards, and the individual may be called upon to pay for all services over 30 feet in length. In Glasgow a three-year contract may be required. In the City of London the premises must be within 25 yards. In a portion of the area supplied by the Newcastle Supply company, in Southwark and in the areas of the Westminster and St. James companies, any public lamp within 75 yards of a distributing main must be supplied. In the areas where the Newcastle Supply company has power to supply to authorized distributors, the maximum term of the contract is seven years.

As regards these provisions, it should be noted that where the mains are laid under the sidewalks, as is generally the case, even the limit of 30 feet is more than sufficient to reach any premises under ordinary conditions.

D 14. Give statutory provisions regarding improvements and new processes. None, in any instance.

Price.

D 15. Give statutory provisions regarding price of service, arrangement of charges, discounts, deposits, etc.

I. The Act of 1882, which is of general application, declares that all persons under the same circumstances and demanding a corresponding supply are entitled to the same rates.

II. The special acts and provisional orders have generally authorized municipalities and companies to charge for electricity (otherwise than by agreement) by (a) the actual amount of energy supplied; or (b) the electrical quantity contained in the supply; or (c) such other method as may be approved by the Board of Trade, provided that any consumer who objects to that method may require the undertakers to charge according to (a) or (b), at their option. Notice must be given of the method of charge selected, and the method may not be changed except after one month's notice. Agreements may be made with the consumers for any price and method of charging. When so requested by the local authority or the company, the Board of Trade may revise the methods of charge of companies and establish new ones any time after seven years from the granting of the powers or from the last revision.

Variations of these clauses are found in the statutes of St. Pancras and of the Westminster and St. James companies, the Central company having no powers of charge whatever. The statutes of the first three undertakings authorize charging by (a) or (b) above, or according to the number of hours of actual use of the supply and the maximum current to which the consumer is entitled, unless the Board of Trade otherwise directs.

Where (b) is adopted as the method of charge, the quantity of energy supplied shall be the product of the electrical quantity and the standard pressure at the junction of the distributing mains and the service lines or at the consumers' terminals. Where the third method authorized in the case of St. Pancras and the Westminster and St. James companies is in operation, the quantity supplied shall be calculated upon the supposition that the consumer used the maximum current during all the hours of supply.

III. The maximum prices that may be charged for current, except for public lamps the prices of which are fixed by agreement or arbitration, are as follows:

| *Undertakings.* | *Price per Quarter.* | *Up to ... Units per Quarter.* | *Price for Each Additional Unit.*[1] |
|---|---|---|---|
| Manchester[2] ..... | 13s. 4d. | 20 | 8d. |
| Liverpool[3] ..... | 13s. 4d. | 20 | 8d. |
| Glasgow ..... | 13s. 4d. | 20 | 8d. |
| St. Pancras ..... | £3 10s. 0d. | 100 | 8d. |
| Newcastle-District ..... | 13s. 4d. | 20 | 6d. |
| London-City ..... | 8s. 4d. | 12½ | 8d. |
| Westminster ..... | 13s. 4d. | 20 | 8d. |
| St. James ..... | 13s. 4d. | 20 | 8d. |
| Central..... | No limits. | | |

(1) A "unit" is the energy in a current of 1,000 amperes flowing under an electromotive force of 1 volt during 1 hour.

(2) Prices in areas outside the city are to be the same as those within.

(3) These maxima may be increased with the approval of the Board of Trade.

*Newcastle—Supply.* The limits in the different areas supplied vary considerably. In Newcastle and Gosforth the company may charge 13s. 4d. per quarter for the amount used up to 20 units, but only 6d. per unit for all over 20 units per quarter. In all of the other areas where current is generally distributed, except Walker, the limits are 11s. 8d. and 7d., respectively. In Walker prices are limited to 4d. per unit upon the average, including meter rentals, and may not exceed the lowest prices charged to similar consumers in any other district supplied. Power users need not pay over 1d. per unit after the first hour's use at the maximum. The company must also supply fittings and do wiring free. In the areas where the company is authorized to supply in bulk to authorized distributors, the limits are 6d. per unit for all up to 90 hours' use per quarter at the maximum and 1d. per unit for all over.

*Newcastle—District.* The price for public lamps is limited to 4d. per unit. In Newburn the limit for lighting is 6d. and for power 2½d. per unit when not more than 200 hours of supply are used per quarter at the maximum and 1d. when over 200 hours are used.

IV. There is no method provided for the periodical revision of these limits for municipal plants, except at St. Pancras, where the Board of Trade may substitute other limits upon application of 20 consumers. In the statutes relating to the companies there are clauses which authorize the Board of Trade, when so requested by the local authority or the company, to establish new limits any time after seven years from the granting of powers or from the last revision. The only companies to which this does not apply are the City of London and the Central, and it applies to the former in Southwark. The act of the Central company extends the above plan for periodical revision to every area supplied by any company which receives electricity from the Central company.

V. There are no limits upon the prices which may be charged for fittings or apparatus, but the acts generally prescribe that the municipality or the company may be required to furnish and place meters at *reasonable* rates, no amounts being named. In Liverpool the scale of prices must be approved by the Board of Trade. Where deposits may be required, interest at 4 per cent. per annum must be paid on every 10s. deposited.

See also inquiries D 23 and 26.

Service.

D 16. Give statutory provisions regarding character and quality of service.

No special provisions, except so far as those given under inquiry D 12, affect and determine character of service.

D 17. Is there any authority not connected with the municipality or the company which tests the current and the character of the service?

Electric inspectors may be appointed as described below to inspect and test lines, works and service, to examine and certify meters, and to perform such other duties of a similar character, and in such a manner and with such fees as may be fixed by the appointing body. Apparatus for making tests shall be provided and maintained by the undertakers, and every facility afforded for proper inspection and testing. Appeal from any report of an electrical inspector may be taken to the Board of Trade.

*Municipalities.* Where the municipality operates the plant the Board of Trade, upon the application of a consumer or of the city, may appoint the inspectors and fix their salaries, but they are paid by the local authority. Testing stations shall be established, equipped and maintained when so ordered by a court of summary jurisdiction upon application of ten consumers. In St. Pancras the court, instead of the Board of Trade, may appoint inspectors and fix their salaries. In Glasgow the sheriff has the powers of the court regarding testing stations. In no town have inspectors been appointed under these provisions.

*Companies.* Where there is a private company the local authority may appoint the inspectors, or in case of default the Board of Trade upon application of a consumer or the municipality. It may also pay such salary as it deems wise or substitute fees therefor. The company shall establish, equip and maintain such testing stations as required by the local authority. The Central company is the only one to which these provisions do not apply at all, and they are not found in the power acts of the Newcastle Supply company. In all cases the local authorities have appointed inspectors.

D 18. Are the results of such examinations published?

*Municipalities.* None to publish.

*Companies.* Yes, ordinarily.

D 19. Give statutory provisions regarding performance of public work by contract or direct employment. None.

D 20. Give statutory provisions regarding letting of contracts. See answer to inquiry D 20 under Gas.

Securities.

D 21. Give statutory provisions regarding issuance of stock.

*Municipalities* do not issue dividend-bearing stock—share capital, as it is called in England.

*Companies.* No statutory provisions, except in the general acts relating to companies. The amount of share capital may be increased or decreased as each company wills through its articles of association. There are no auction clauses or sliding scale provisions as in the case of gas companies.

D 22. Give statutory provisions regarding issuance of bonds (loan capital). See also D 25.

*Municipalities.* The Act of 1882 provides that a local authority empowered to supply electricity may borrow money upon the

security of the local rates with the approval of the County Council in London, the Local Government Board in the rest of England and the Secretary for Scotland in Scotland. It also enacts that money may not be borrowed except for permanent works, that the period of repayment shall be approved by these same authorities and may not exceed sixty years, and that the loan shall be repaid within the period set.

*Manchester.* All the loans, amounting to £2,359,546, upon March 31, 1905, have been sanctioned under the above provisions, except £75,000 authorized by a special act in 1902. The city may not mortgage its plant in outside areas as security for its loans, but otherwise they are secured by the property, revenues and taxing power of the city.

*Liverpool.* A loan of £500,000 was authorized by a special act in 1896, but over £1,000,000 have been borrowed under the Act of 1882. All the corporate stock is a charge upon all the revenues of the city.

*Glasgow.* Prior to 1899 the money needed was secured under powers conferred upon the gas committee for lighting purposes. In that year authority to loan £500,000 was secured from Parliament for the electricity undertaking specially. In 1902 all limits were removed and approval by the Secretary for Scotland substituted therefor. All loans must be repaid within thirty years.

*St. Pancras.* All loans have been made under the Act of 1882.

*Companies.* No statutory provisions except those in the general acts relating to all companies, which are of no importance here. There is no limit to the amount that may be issued. Mortgages shall not be a charge upon the undertaking when taken over by the municipality.

**Financial Matters.**

D 23. Give statutory provisions regarding use of income or any portion thereof.

*Municipalities.* The clause generally found in all statutes is substantially: All moneys except capital moneys shall be applied as follows: (1) in payment of working expenses, maintenance, damages, etc.; (2) in payment of interest on mortgages, stock and borrowed moneys; (3) payments to sinking fund; (4) in payment of all other expenses not chargeable to capital; (5) to reserve fund, if thought fit, such sums as seem reasonable, to be invested with income thereon in government securities until such accumulated fund shall amount to one-tenth of the aggregate capital expenditure, this fund to be used to make good any deficiency in revenue or to meet any extraordinary claim or demand; (6) in aid of rates, improvement of the district or reduction of the capital moneys borrowed for electrical purposes, provided that if the surplus shall in any one year exceed 5 per cent. upon the aggregate capital expenditure, such a reduction shall be made in the prices charged as

will reduce the surplus to the maximum rate of profit. Capital moneys shall be used for capital purposes or applied to the reduction of debt. These provisions apply to all of the public plants, except that in St. Pancras the rate is 7 per cent. instead of 5, under subhead (6).

*Companies.* See data under inquiry D 26.

D 24. Give statutory provisions regarding depreciation.

None in any case, but see answers to D 23 and 25.

D 25. Give statutory provisions regarding sinking funds.

*Municipalities.* Under the Act of 1882 the Local Government Board, the Secretary for Scotland and the London County Council may fix the periods within which loans must be repaid. The act further provides that repayment may be made by equal annual installments of principal or of principal and interest, or by setting aside such a sum as will equal with accumulations the amount of the loan when due, the fund being invested in government securities; that the sinking fund may be used to pay off obligations at any time, provided that a sum equivalent to the interest on the sum so used be paid into the fund annually; and that loans paid off before the end of the period may be reissued for the unexpired portion of the term.

All loans made under the Local Loans Act, 1875, must be repaid within the time specified (a) by annuity certificates for the period, (b) by the payment of a certain number of debentures every year, equal annual installments, (c) by the annual appropriation of a fixed sum, or (d) by a sinking fund. Where the last method is in operation, such yearly or half-yearly sums shall be set aside and accumulated at compound interest as will be sufficient to pay off within the prescribed period the whole of the loan. The funds shall be invested under the direction of the Local Government Board in such securities as trustees may invest in or in securities issued under this act. If any part is invested in the securities of the local authority or is applied to paying off any part of the loan before it is due, the interest thereon shall be paid into the fund. The local authority must make a return to the Local Government Board within twenty-one days from the end of the year showing the amount invested, the amount applied, the character of the investments, etc. If it appears that the local authority has not complied with the law, the Board may direct that the amount in default be raised, invested or applied, as the case may be.

*Manchester.* The equated period for all loans is 25.75 years.

*Liverpool.* The Act of 1896 authorizing the purchase of the undertaking requires the city to pay off the loans authorized—£500,000—within forty-two years from date of issue. The Local Government Board, under another act, may increase or diminish payments to sinking fund if it sees fit.

*Glasgow.* The Secretary for Scotland has approved every loan made for the electrical undertaking.

*St. Pancras.* This borough borrows money from the County Council and is subject to its regulations as to sinking funds.

*Companies.* No requirements in any instance.

D 26. Give statutory provisions regarding profits and dividends.

*Municipalities.* There are no limits, except as stated under inquiry D 23.

*Newcastle—Supply.* I. The Order of 1893, which conferred powers for the city of Newcastle, provided that when profits amount to more than 8 per cent. on the capital of the company and also more than enough to make up dividends in past years to 8 per cent., one-half of the excess shall go to reduce prices in the following year. If any dispute arises as to the interpretation and application of this clause, it shall be settled by arbitration, upon request of the local authority. It should be noted in this connection that there are no statutory limits upon the amount of capital nor any public supervision of its issuance. As the dividends have never exceeded 8 per cent. the clause has not become operative. There is some question whether it has not been repealed.

II. The Acts of 1899 and 1902, applying to certain areas outside of Newcastle and to supplies in bulk, provide that if the average price per unit is less than 2½d. the rate of profit may be increased by one-fifth of 1 per cent. for every 1¼ per cent. reduction from 2½d. If the average price is more than 2½d. a proportionate reduction in rate of profit must be made, but back dividends may be made up to 8 per cent. If profits exceed the authorized rate the excess may be used to the extent of 1 per cent. per annum to form an insurance fund, to be invested and accumulated until it is equal to 5 per cent. of the capital. This fund may be used to pay cost of renewals or extraordinary claims from accidents, strikes or other sources which, in the opinion of two justices, due care and management could not have prevented. All excess over authorized dividends and insurance fund is to be carried as a balance to the next year. When the dividend shall exceed 8 per cent. and the average price be below 2½d. per unit the company may set apart such sums as it sees fit out of the divisible profits, to be invested and to constitute a reserve fund to be applied to the payment of dividends when the profits of the year shall be insufficient to allow the company to pay a dividend as authorized above. The Board of Trade at any time after the expiration of 10 years, upon the application of the company or any three authorized distributors, or any twenty consumers, may revise the maximum prices, the standard rates and the relation between price and dividend, and similarly revise them any time after ten years from the last revision.

The Act of 1903, granting powers in still other areas, limited the rate of dividend to 5 per cent., left the standard price as before, 2½d., and provided that the dividend may be increased by one-fourth of 1 per cent. for every one-fourth of a penny by which the average is below the standard price. If price is more, dividends

must be reduced proportionately, but back dividends may be made up.

There is room for difference of opinion as to the applicability of these various statutes. When one considers the difficulties of differentiating the capital, the receipts and the expenditures for the various areas, it would seem that the natural interpretation would be that the Acts of 1899 and 1902, as amended in 1903, would apply equally to the whole area of supply, but the statutes are not clear. As there has been no adjudication of the question it must be left open.

*Newcastle—District.* Similar clauses to those given in paragraph I. above were enacted in 1891. There are no statutory limits upon the capital that may be issued, and although 8½ per cent. dividends have been paid for a number of years, the excess of ½ of 1 per cent. has apparently not yet made up to 8 per cent. the dividends in the first few years.

*London—City, Westminster, St. James, Central.* None.

D 27. Give statutory provisions regarding compensation for franchises.

*Municipalities.* Inquiry is not applicable.

*Companies.* In a sense all of the restrictions and limitations under which the companies are operating are in compensation for the franchises they hold, but the inquiry has reference rather to the direct payments or equivalents in service rendered to the local authorities.

*Newcastle—Supply.* None, unless the clause in the Walker Act be so considered, which requires the company to run the refuse destructor and to pay the interest and sinking fund on the money borrowed to build it and the electrical system. It is much more likely that these are merely the payments for the plant which was taken over, and which combined a refuse destructor with a generating station.

*Newcastle—District.* None, except possibly in the district of Benwell and Fenham (see inquiry D 11 above), and in that case also an electrical system was leased as well as the right to operate.

*London—City, Westminster, St. James, Central.* None.

D 28. Give statutory provisions regarding audit of accounts.

*Manchester, Liverpool.* The accounts of English boroughs must be submitted to three auditors. Two are elected annually by the ratepayers, and the third is appointed by the mayor. The elective auditors may charge two guineas per day for their services, under the Public Health Act. The mayor's auditor is unpaid. The elective auditors must be qualified to be members of the town council, but must not be members or officials of the council. The mayor's auditor must be a councillor. They have no power to charge an officer with an item illegally expended and order that he pay it. They can only report what they find and appeal to the public or the city officials to take action. Most of the

large boroughs also appoint trained accountants as auditors, although not required to do so by law. The form of accounts is prescribed by the Board of Trade.

*Glasgow.* The English law does not apply to Glasgow, but statutes require that the city shall appoint auditors annually who shall not be officeholders but skilled in accounts, and also fix their compensation.

*St. Pancras.* The auditor is appointed and removed by the Local Government Board, which fixes his salary, prescribes his duties and directs his activities. He has the power to disallow any item of expenditure and direct the disbursing officer to make it good, subject to appeal from his decision to the Local Government Board.

*Companies.* The accounts are audited by persons appointed by the Board of Trade. Their compensation is also fixed by the board, but paid together with their expenses by the companies. Access must be given to all books, papers and documents and every facility afforded. The Board of Trade may make regulations prescribing the time and method of audit. The only instance where these provisions are lacking is that of the area of the City of London company in Southwark, but as they apply to most of the area of this company they are in force for all practical purposes. There are also auditors appointed by the shareholders, except in the Westminster company.

D 29. Give statutory provisions regarding publicity of reports and records.

The general law requires that every municipal and company undertaking shall make up its accounts annually in such form as the Board of Trade may prescribe. A copy of the annual statement shall be furnished to every applicant at a price not to exceed 1s. per copy. The provisional orders usually prescribe that the accounts of the undertaking shall be kept separate from all others. In the City of London the local authority has the right to inspect the records and books of the company.

D 30. Give statutory provisions regarding settlement of claims for injuries or death. None.

### Labor Conditions.

D 31. Give statutory provisions regarding salaries paid. None.

D 32. Give statutory provisions regarding wages to day laborers. None.

D 33. Give statutory provisions regarding hours of labor of day laborers. None.

D 34. Give statutory provisions regarding employers' liability. See answer to inquiry D 34 under Gas, which applies here.

D 35. Give statutory provisions regarding pensions to employees.

***Manchester.*** See inquiry D 35 under Gas.

*Liverpool.* By the Liverpool Improvement Act, 1882, the city was empowered (a) to make allowances or gratuities to employees or their widows or families from the ordinary funds; and (b) to establish a superannuation fund for employees appointed after that date. Certain amendments were made by the Liverpool Corporation Act, 1893, but at present the fund consists of deductions from wages (or salaries) and the accumulated interest from investments of such sums. The benefits are open to all employees except those doing temporary or casual work.

The contributions to the fund amount ordinarily to 3 per cent. of the wages paid and are deducted from wages and paid into the fund. The account of each contributor is, until he comes upon the fund, kept separately and the interest on his payments carried half-yearly to his credit.

The investments must not be made in any securities of Liverpool, but in the mortgages, bonds or debentures of any other municipality, or in any securities authorized by law for trustees' investments. When the rate of interest received falls below the rate fixed for the time being by the municipality the difference may be made up out of city funds.

Recipients of superannuation must either (a) be sixty years of age; or (b) have been incapacitated for service through illness or accident not brought about by their own misconduct; or (c) have been compulsorily retired by the council in the interests of the service, but for reasons not justifying dismissal.

Servants appointed before the Act of 1882, on retiring with consent after twenty-five years' service, are entitled for each year's service to at least one-sixtieth of their average annual salary and emoluments, calculated upon the previous fifteen years. But if they have contributed to the superannuation fund for at least ten years, they are entitled to the scale given in the following paragraph. All payments in this class come out of the ordinary funds of the city, subject to contributions from the fund.

Servants appointed since 1882, and entitled by contribution and by age or incapacity, fall into the following classes: (a) On twenty-five years or more of service they receive twenty-five fiftieths of their wages at time of retirement, with an extra two-fiftieths for each year of service beyond twenty-five; but a higher allowance may be granted in special circumstances, provided that in no case does the total amount exceed two-thirds of their wages. (b) On fifteen years or more of service (but less than twenty-five) they receive fifteen-fiftieths of retiring wages, with an extra one-fiftieth for each year of service beyond fifteen; but a higher allowance may also be made in special circumstances. (c) On less than fifteen years' service some allowance may be made if it is thought fit.

In place of receiving superannuation allowances contributors retiring with consent may claim the amounts standing to their credit; so also may contributors of at least ten years' service who are leaving voluntarily and not to escape dismissal.

Servants appointed since 1882 and not having hitherto contributed may do so and become entitled, but the first ten years' contributions must be at the rate of 5 (not 3) per cent. of wages.

A servant required to retire by the council in the interest of the service, but for reasons not justifying dismissal, may claim an allowance (a), if appointed before 1882, of at least one-sixtieth of his wages for each year's service, or (b), if appointed since 1882 or having since 1882 made ten years' contributions to the fund, of one-fiftieth for each year's service up to two-thirds of his wages; or he may instead claim the amount standing to his credit.

Employees who leave before ten years of service, or are dismissed for misconduct, or are guilty of fraud, forfeit all claims on the fund. The amounts standing to their credit are then carried into the general account of the fund. Once an allowance has commenced the subscriber's separate account is closed and the amount carried into the general account.

On the death of a contributor his widow or other legal personal representative may claim the amount standing to the credit of the deceased. If an superannuated servant dies before receiving 75 per cent. of the amount which was standing to his credit on retiring the city may, if it thinks fit, pay over the balance to his representatives or apply it in any other way to their benefit.

The practice of the city is itself to decide in every instance whether an officer shall be appointed subject to the provisions of the act or not. As a rule officers appointed in an established capacity are compelled to contribute to the fund.

*Glasgow.* See inquiry D 35 under Gas.

*St. Pancras.* None, except that under the Metropolitan Superannuation Act of 1866, the borough may grant allowances or pensions on the grounds of permanent infirmity or old age, provided the pension does not exceed two-thirds of the former salary and that the recipient be sixty years of age to qualify for "old age." In any case, he must have served not less than ten years, when he may receive ten-sixtieths of his salary, with an addition of one-sixtieth for each year up to forty-sixtieths. Ten years may be added to the actual length of service for exceptional services, etc. A grant may be made to any employee of three months' pay for each two years of service.

*Companies.* No statutory provisions in any instance.

D 36. Give statutory provisions regarding strikes. None.

D 37. Give statutory provisions regarding citizenship of employees. None.

D 38. Give statutory provisions regarding conditions under which employees labor.

None, except the general provisions in such acts as the Factories and Workshops Acts, which apply equally to municipalities and companies.

D 39. Give statutory provisions regarding other important matters.

Every municipality and company is required to make, keep up to date and hold open for examination a map of all mains, service lines and underground works, except services, upon a scale prescribed by the Board of Trade. In Manchester all repairs to streets and street paving in connection with the electricity undertaking must be paid for by the undertaking.

**Remedies.**

D 40. What means have been provided for the enforcement of the above provisions?

D 41. Are they adequate? D 42. Give defects.

I. The various remedies for enforcing statutory regulations may be grouped into four classes, viz., judicial, legislative, administrative and "extra-legal." The first class includes the well-known remedies applied through the courts, and its scope, advantages and defects have been stated in answer to inquiries D 40, 41 and 42-I. under Gas, q. v.

II. The second class of remedies—administrative—is much more comprehensive than in the case of gas undertakings, as will become manifest upon comparing the data under inquiry D 44 for Gas and for Electricity. The departments of the central government having most to do are the Local Government Board in England and the Secretary for Scotland in Scotland, and the Board of Trade. The former have jurisdiction over loans and sinking funds (see inquiries D 22, 25 and 44-II.), and their control is quite effective. As the same principles apply here as in the case of Gas Works, the reader may be referred to inquiries D 40, 41 and 42-II. in the Gas Works Schedules, for a discussion of the advantages and disadvantages of this control as a remedy.

The Board of Trade has greater powers over electric supply works than any central department has over gas undertakings. This is largely due to the fact that when the Gas Acts were drafted central control was in an embryonic stage and its utility not generally admitted. By the time electrical development had reached a stage which made legislation necessary, the desirability of central supervision had been fully demonstrated, and it was made very prominent, as shown under D 44-III., below. These powers are far-reaching, and so far as the safety of the public is concerned they apparently provide adequately for the *enactment* of proper regulations and safeguards.

But what may be done in case of disobedience of statute or ordinance? The duty of enforcement is largely handed over to the private individual and the local authority upon the theory that if neither is sufficiently affected thereby to induce him to act, the disobedience cannot be so harmful as to call for any action. Further, the Board of Trade has no adequate system of inspection of its own to discover illegal acts or delinquencies, except

through the audit of accounts. But if the case is sufficiently urgent to call for a drastic remedy, and it is brought to the attention of the board, it has a few effective weapons at hand. In certain instances it may revoke the powers of the company or municipality in whole, or in part with the consent of the undertakers. It may order them to cease operations until the matter complained of has been remedied.

Upon the subject of audit it is important to note that neither the professional accountants who audit the books of the municipal undertakings nor the auditors appointed by the Board of Trade to examine the accounts of private companies have the power possessed by the Local Government Board auditor at St. Pancras or the Board of Trade auditor of the South Metropolitan Gas Company. In the case of St. Pancras the auditor may surcharge an item and order it paid by the responsible official. The auditor of the South Metropolitan company may refuse to allow dividends to be paid until his wishes are met. But the auditors of electric accounts may only report what they find, and must depend upon other means to enforce their opinions. As a remedy the system of audit for electric lighting accounts is therefore weak in this regard.

There is practically no system of *local* administrative control. In the case of municipal plants the town council is the ultimate source of authority, and although of course an appeal may be taken at any time from the action of a subordinate to a higher official, and finally to the town council, there is no established, legalized method of procedure. It is all more or less informal, and any change in the policy of the council must be brought about by persuasion or the election of other members. The powers of the local authorities over private companies are set out under D 46, from which it will be seen that practically the only control exercised is over street work.

III. Upon the subjects of legislative and extra-legal remedies and the efficiency of all remedies when taken as a unit, the reader is referred to inquiries D 40, 41 and 42-III., IV. and V. in the Gas Works Schedules, as the principles there stated apply to electric lighting as well, barring the illustrations that are not applicable.

D 43. If judicial or administrative orders have been issued by central authorities relative to electric supply undertakings, state them, and give source and date of issue.

None could be found, except those referred to under D 12-I, 22, 25, 44 and 48.

D 44. If any central board, commission or other authority has control or supervision as regards electric lighting undertakings, give statutory provisions relating to its powers and functions.

I. There are four departments of the central government which exercise some sort of control: The Postmaster General, the

Local Government Board, the Secretary for Scotland and the Board of Trade. The Postmaster General's powers are limited to the approval of plans for street work and earth connections. One month before any new work is begun, the municipality or company must serve notice upon him, describing the proposed works and giving plans and data which will indicate fully the character of the proposals. The Postmaster General may disapprove or approve with conditions and recommendations, and his suggestions must be adopted by the undertakers, unless upon appeal to the Board of Trade he is overruled. These clauses appear in practically every act and provisional order approved by Parliament.

II. The Secretary for Scotland and the Local Government Board may be treated as one, for their powers are practically the same, relating principally to loans and sinking funds (see inquiries D 22 and 25). There is one additional provision which appears in nearly every act, especially in recent years. It is that ten (or twenty) or more houses occupied by laborers may not be acquired without the consent of the Home Secretary, the Local Government Board or the Secretary for Scotland, depending upon the locality. Occasionally cities are required to get the approval of the Local Government Board before taking more than five acres of land at one time for electric lighting works.

III. The functions of the Board of Trade are much more numerous and varied. A complete list in all detail would fill pages, and a reading of the statutes is necessary to show how far-reaching are its powers. Only the more important ones need be mentioned here, and those of general application will be given first.

The following matters must be approved by the Board of Trade before execution, the references in parenthesis being to the inquiries where they are given more fully: Transfer of powers to another company or municipality (D 2); regulations of the local authorities relative to public safety (D 12-II.); system and mode of supply, overhead wires (D 12-III.); a new method of charging for current (D 15-II.); earth connections (D 12-III.); breaking up of private streets, etc.

The Board of Trade issues, rescinds and amends regulations to secure public safety (D 12-I.); prescribes the form of the annual statement of accounts (D 29); appoints the auditors of company accounts, fixes their salaries and prescribes the time and method of audit (D 28); may extend the time within which mains must be laid in certain streets (D 13-I.); may increase the maximum percentage for which an undertaker may require a prospective consumer to give a contract (D 13-III.); may revoke a grant of powers in whole or in part with the consent of the undertakers, for going outside its area, failure to obey the statutes and other causes (D 4 and 40); fixes the maximum prices which may be charged consumers upon appeal from the local authority or the company (D 15-IV.); appoints electrical inspectors upon the application of one consumer or the municipality and fixes their salaries, duties and fees (D 17-I.); appoints arbitrators to settle disagreements; fixes the

details of transfers of plants from companies to municipalities; decides whether a company is able to execute its powers and settles appeals from decisions of the Postmaster General as to street work and from the scale of charges for meter rents, etc. The powers of the Board of Trade relative to the granting of provisional orders are given and discussed in the special report on legislation in Great Britain.

IV. The additional powers in special instances are:

*Liverpool.* See under inquiry D 15 above.

*St. Pancras.* See inquiry D 12. The Board of Trade may direct an inquiry into the working of the system, may suspend or modify obligations to furnish supply, and may substitute new regulations for those in the act if a high tension system of arc lighting is adopted.

*Newcastle—Supply.* See under inquiry D 12 above.

D 45. What have been the effects of this supervision?

I. The control possessed by the Postmaster General and the central departments as to workmen's dwellings is generally approved as wise and beneficial. There seems to be no opposition to its existence or the manner in which it is exercised. This is also largely true of the supervision of the Local Government Board or the Secretary for Scotland over loans and sinking funds. Municipalities sometimes insist that the periods of repayment are too short in view of the large expenditures for extensions and renewals they claim to have made out of revenue, and there are instances of unnecessary severity, but generally speaking the supervision is not objected to by the municipalities and is considered a wise and effective safeguard by the public. It may be unnecessary in many cases, but when needed it is a ready and effective weapon against unwise action whenever and wherever it may appear.

II. The Local Government Board has supervision of the audit of accounts in only one plant under examination, that of St. Pancras. This central audit is apparently very thorough and not opposed by the borough officials. The accounts of all the companies are audited by agents of the Board of Trade. They examine the vouchers, or such of them as they think necessary, compare them with the books and report any irregularities they may find. They do not have the power of surcharge which the auditors for the Local Government Board possess, but as the companies are supervised in other directions by the Board of Trade and are constantly before it for authority or approval, they do not care to antagonize it by refusing to do as the auditors suggest. The auditor usually comes around some time after the close of the year, and it is, of course, impossible to make any change in that year's accounts; the correction must go over to the next year. He is an accountant and, usually, a barrister, but seldom has any engineering training. He cannot go deeply, therefore, into the proper charging of all items, but he attempts to keep out of capital all items that ought to go to revenue. This and the honesty and legality of the accounts

are the points to which he devotes most of his attention. The companies do not object to the audit; they are satisfied with its working, and the public seems to feel that it is an added guarantee of the honesty and efficiency of the management—one which could not wisely be done without. The result is that the published accounts of the electrical companies in Great Britain are considered above suspicion and an accurate transcript of the books of the undertakings.

III. The control of the Board of Trade over technical matters has called forth some adverse criticism. Perhaps it would be more accurate to say that the decisions of the board have been criticised rather than the system of supervision, for it seems to be quite generally recognized that there must be some sort of central control; otherwise an occasional company or municipality might not safeguard the public welfare with sufficient care. There is not much need of the control if a plant is well equipped and managed, but the system exists to reach the negligent or careless, and at the same time not to retard the efficient.

The principal ground of criticism is that the board has been too conservative, too cautious, too reluctant to allow the adoption of new methods. In its solicitude for the safety of the public it has retarded the development of the industry by refusing to allow experimentation, for it is only when an invention is put into actual practice that its utility or worthlessness can be quickly and fully demonstrated. The general opinion is also that something has been gained, as this attitude has been a check upon hasty and unwise action, and that at present the attitude of the board is much more favorable to progress and steady development than in the past. Criticism, consequently, is on the wane, and the general sentiment is favorable to the system of control and its present execution.

D 46. What powers of supervision over private companies does the city possess?

*Companies.* The instance in which the municipality comes most directly in touch with private companies is in the breaking up of streets. Before any new work is begun in the streets a notice must be served upon the local authority describing the project and accompanied with such data and plans as may be needed. If the local authority disapproves, the plans must be altered or an appeal taken to the Board of Trade (see D 12-III.). Before streets may be opened for any purpose a notice must be served upon the local authority, unless the case is urgent, and a permit secured. Wires may not be placed overhead without the consent of the local authority. It also has the power to enact by-laws relating to many matters, including electric lighting ordinances (cf. D 12), to appoint electrical inspectors (D 17), to petition the Board of Trade for a revision of prices (D 15), and to enforce the laying of new mains upon certain conditions (D 13). Indirectly considerable influence may be brought to bear when the plant may be taken over by the municipality (D 8), but of course this is not often, and is usually far in the future.

D 47. What provisions has the city made for the exercise of its powers of supervision?

Generally speaking the cities have taken full advantage of their powers when necessary. Inspectors have been appointed, and the breaking up and replacing of the streets is very closely watched. Indeed, there is some complaint, particularly in the City of London, that the local authority is too harsh in its restrictions. No revisions of limits upon prices have been secured, but there seems to be no feeling that the authorities have been delinquent in this regard.

D 48. Has the company resisted the enforcement of the legal provisions providing for public supervision?

No record could be found of any important resistance in recent years, unless the instances in London be so considered. The litigation relative to the contracts for public lighting of the City of London Company has been described under A 5 to 8. The company also has been called into court for violating the smoke ordinance and the by-laws relative to opening streets. Until it purchased the surrounding property it had trouble about vibration also.

# ENGINEERING MATTERS

## British Electricity Supply Works

## (Schedule III)

By J. B. KLUMPP and A. E. WINCHESTER

H 1. Data for year ending: Manchester, March 31, 1905; Liverpool, December 31, 1905; Glasgow, May 31, 1905; St. Pancras, March 31, 1906; Companies, December 31, 1905.

### DESCRIPTION OF PLANTS.

H 2. Give brief description of generating stations. (See also H 4 and H 64.)

*Manchester.* There are three main electric generating stations in Manchester, two directly in the heart of the city and one on the outskirts about three miles from the commercial centre. The two in the centre are known as the Bloom Street station and Dickinson Street station. The Bloom Street station is practically an annex to the Dickinson Street station, as they are built side by side with only an arm of the canal between them. The last mentioned belongs to a type in vogue about twelve years ago with some modern apparatus crowded in, but the Bloom Street station is quite modern in both design and equipment. These two stations together contain thirty-three Babcock & Wilcox and Lancashire boilers of various sizes. The Dickinson Street station has both direct-connected and belted-engine units, and four direct current turbo-generators. The units in the Bloom Street station are uniform in size, consisting of vertical engines connected direct to direct current generators.

The general arrangement of the Dickinson Street station, though originally well planned, is now very bad, especially with regard to the boilers and the great amount of complicated steam piping which necessitates long runs before reaching the engines, which appears to have been due to several enlargements. The station is built to operate partly non-condensing, as the quantity of water in the canal is limited and, being still, becomes so hot as to injure boats and therefore cannot be used for condensing during heavy loads. All coal is received by barge as there are no nearby railroad connections. The coal storage is small and the method of handling rather congested and unhandy. These sta-

tions, originally intended for low tension service, were not badly located and are well located for sub-stations, but in contrast with modern practice, their efficiency as generating stations, especially the Dickinson Street station, is not favorable, because of restricted location, limited condensing facilities, old apparatus and complicated piping.

The Stuart Street station is the newest and largest of the three. It is situated in the city's outskirts, and it will appear that its position was rather unwisely selected, being located on a canal that can supply coal only at a cost higher than by rail and that is too small for condensing purposes, thus offering no advantage whatever. To obtain coal it was necessary to build a viaduct about two miles long to the nearest railroad, which was rather an expensive operation, as it consists of elaborate steel, masonry and earth construction. The station, of massive and ornamental design, was built on quite extravagant lines and in two instalments. The first was well planned, having the rows of boilers at right angles to the generating house, but subsequent engineering errors have changed the original design, so that further extensions cannot be made with the same facility as if the original design had been followed. The first installation consisted of six large vertical steam driven units, and in 1902 two large vertical engines direct connected to alternators were installed. These large units necessitated a generating house of immense dimensions and costly construction. Space was left for two more such units, but it will probably be utilized for the installation of three or four large turbo-alternators.

For condensing purposes, forced draught cooling towers have been erected so that all units run condensing. The railroad trestle for supplying coal is equipped with hoppers and conveyors to distribute the coal to the bunkers in the two boiler rooms. The boilers are all of the Babcock & Wilcox land type, supplied with automatic stoking chain grates. In the new boiler house each boiler has its own Green's economizer, all of which are included in the building, which is very large for the capacity installed. All in all the Stuart Street station is probably the most expensively built plant for the capacity installed that has been visited.

There are nineteen sub-stations equipped with motor-driven generators and balancers. The principal output from these sub-stations is for the tramway service. They are scattered all over the city and outlying districts, some of which are underground in the thoroughfares. There are no storage batteries at present.

*Liverpool.* There are two main electric generating plants and ten smaller generating stations, containing in all about eighty direct-connected units. Of the two main stations one was built six or eight years ago, and the second in 1902 with an additional section in 1904. Of the smaller stations there are five separate steam plants with their own boilers and steam generating equipment. These are scattered throughout the city and are operated independently, feeding directly in on the low pressure three-wire distribution system. In addition, there are five other stations with

engines and generators owned by the electric undertaking, but which are located in buildings and receive their steam from boilers owned and operated by the "Destructor" department of the city. The steam supplied at these destructor stations is generated by the burning of garbage, which is a continuous process and necessitates the constant running of the engines at these plants and practically a constant amount of electrical energy being generated. Thus variations in loads must be taken up by the five small stations and the two large stations, owned by the electrical undertaking.

The Pumpfield station, which is directly in the heart of the city, is located on the side of a slip of the Leeds and Liverpool canal, receiving all of its coal by barge. This coal is shoveled into conveyers which conduct it to hoppers directly in front of the boilers. The station equipment contains 28 Lancashire boilers of 350 H. P. each, two stacks 200 feet high, and 14 Willans & Robinson vertical steam engines direct connected to direct current generators. Twelve of these units are of 700 K. W. each, and two of 150 K. W. each, making the total capacity of the station 8,700 K. W. The Pumpfield station is designed to run condensing, but the canal slip being a dead end will not allow all of the units to be run condensing at the same time, without undue heating of the canal water.

The three large stations in Liverpool, handsome, substantial structures, are all built on the same general design, a long central generating room with two parallel boiler houses, one on either side. The boiler-rooms are arranged so that the stack is in the centre of each house, with seven boilers on each side, a single economizer being provided for each group of boilers. Provision is also made for induced draught. An extension is built on the front end of the generating house which contains the switchboard equipment built on the engine floor level.

The Lister Drive station is situated about three miles from the centre of the city on a plot of ground containing about fifty acres. The station has railway connections, receiving its coal up long grades and somewhat elevated sidings. This plant is divided into two units or sections, the first section being exactly similar to the Pumpfield station. It contains two boiler houses with 28 Lancashire boilers, four economizers and two stacks, each 250 feet high and 13 feet diameter. The engine room contains 14 vertical Willans & Robinson engines, nine of which have a capacity of 700 K. W. each, and two 150 K. W. each. These are direct-current type and work directly on the low pressure three-wire system. At the same station there are three of the same size units, 700 K. W. each, generating alternating current at 6,000 volts. The total capacity of this section is 8,700 K. W. The switchboard is at the end of the building as at the Pumpfield Station on the engine room floor level.

In the new section at Lister Drive the buildings are complete, being identical to those of the first section, but the boilers and generating units are only about half installed. There are eight Bab-

cock & Wilcox boilers installed of 1,000 H. P. each, and two stacks 250 ft. high by 15 ft. in diameter. The generating equipment consists of two 1,600 K. W. turbo-alternators and two 2,000 K. W. turbo-alternators of the Parsons type. These alternators supply current, with the alternators of the first section, at 6,000 volts, which current is transmitted to the sub-stations where it is transformed to the direct-current tramway and commercial service.

The location of the Lister Drive station, which was selected because the property belonged to the city and adjoined the railroad, necessitates an immense amount of copper to get the output equivalent to 6,000 K. W. of direct current at 480 and 240 volts to the centre of the city. The Lister Drive station is not adjacent to any stream or canal so it has been necessary to install water tanks and cooling towers for the operation of these generators. There are three cooling towers installed, two natural draught of wooden construction, and one forced draught built of steel. Coal is brought into this station by railroad cars running directly over hoppers in front of the boilers. There are four sidings, one to each boiler house, and as these sidings are not over 12 feet high the total coal storage capacity is somewhat limited.

There are eleven sub-stations for transforming the alternating current. Some of these are located in the small steam stations, while some are of recent construction and built solely for converting purposes. The equipment of these sub-stations consists of 39 individual motor generators with a total capacity of 10,800 K. W. There are several small storage batteries installed in connection with the sub-stations, but they are not of sufficient capacity to carry the load except momentarily.

*Glasgow.* There are three generating stations, namely, Port Dundas, St. Andrews Cross and Kelvinside.

Port Dundas station, a massive building of pleasing and convenient design for present equipment, is the largest and is well situated about one mile north of the Clyde on the south bank of the Forth and Clyde canal. This station receives coal by canal or cartage only. There is a railroad on the opposite bank, but as a bridge at this point will not be permitted, there is some talk of running a tunnel under the canal through which a conveyor may deliver coal to the station. This is a condensing station using the canal water, for which the claim is made that it affords an adequate supply for condensing purposes during maximum load. As the canal level is several feet higher than the condensers, pumps are only required to circulate the water. This station is designed so that it can be extended without difficulty. One of the extensions has been built within the last three years, the ultimate capacity being approximately 24,000 K. W., about 15,000 of which is now installed including two 3,000 K. W. turbo-alternators recently erected, one of which is undergoing repairs. No account of these turbos is taken in valuation as they were not included in the last annual report of this department. All the direct current units have vertical steam engines running from 120 K. W. to 1,400 K. W. each. This sta-

tion is located about a mile from the centre of the city, and its situation, equipment and arrangement are of such a character as to enable it to generate and distribute current with comparatively high efficiency.

St. Andrews Cross station, a substantial structure, is the second and next largest station; it is situated south of the Clyde, at approximately the centre of a settled district, on a railroad with low level siding connections, and has elevators to raise the railway cars above the coal hoppers. This station not being on any canal or stream, was originally designed to run non-condensing, but in consequence of steam turbines being adopted, large water tanks and cooling towers have been installed. The water used is from the city mains. This plant was designed to contain about 12,000 K. W. of engine-driven units, of which about seven, varying in size from 300 to 750 K. W., have been installed, and one turbo-alternator of 1,400 K. W. in addition, but as the turbine was installed since the last annual report no account of it has been taken in the valuations. This station is not well located for condensing purposes, and cannot generate to the same advantage as the Port Dundas station.

A third station is located at Kelvinside at the far northwest part of the city, and was obtained by absorption of a small company. The equipment consists of three 250 K. W. steam-driven units, and the current generated is supplied in the adjacent neighborhood.

Since the introduction of the turbo-alternators the department has purchased two property sites for the erection of sub-stations. One on French street near the Dalmarnock gas works, upon which a small inexpensive building of corrugated iron has been erected for motor-generators. The other site being on Cathedral street, near the heart of the city, where a like sub-station is being installed in a permanent brick building. On Waterloo street, the site of the original generating station and where the offices of the electricity department are now located, a sub-station has also been established with an equipment of motor-generators. This station is now being enlarged to provide for further sub-station capacity, but these extensions are not included in the valuations as they are all after the date of the annual report. These three are the only sub-stations and contain motor-generators to the extent of about 6,500 K. W., about half of them were installed after the date of the report and are not included in the valuation. To facilitate the operation, two small storage batteries are installed in each of the main generating stations, that is, at Port Dundas and St. Andrews Cross. These are continually floating on the line and are simply used for balancing purposes, not being of sufficient capacity to carry the load except momentarily.

*St. Pancras.* St. Pancras has two generating stations, one near Regents Park off Stanhope street in the southwestern part of the borough, a rather poor residential section, and the other at Kings road in the central part of the borough near the Regent

canal. There are in addition a southern sub-station at Tavistock, a northern sub-station at Highgate, and three balancing stations, one at Fitzroy street, one at Cobden square and one in St. Andrews Garden.

The Regents Park station was built on a piece of property having an area of about half an acre, which is practically entirely covered with low and irregular brick buildings. It has an office extension and passageway through to Stanhope street. The equipment of this station consists of five B. & W. boilers of 100 H. P. each, and seven three-flue dry-back marine boilers. The generator equipment consists of ten Willans & Robinson's two-cylinder engines direct connected to 80 K. W. generators, of the direct-current type; and four Willans & Robinson's engines, three-cylinder, direct connected to 500 K. W. direct-current generators. There are in addition two motor-generators of 50 K. W. each, which consist of bipolar machines one driving the other. These are to reduce the potential of 220 volts to 110 volts, to supply some few consumers still maintained on the 110-volt system. There is at this plant an overhead copper tube evaporative condenser of a capacity equal to about one-fourth of the generating capacity of the station. There are also two stacks, two water heaters and necessary circulating and boiler feed pumps. All coal and ashes are carted, and as the station is practically non-condensing, its efficiency therefore, though favorable at the time of its construction as regards location, is now under that of modern practice.

The Kings Road station is located on Kings road at the corner of Pratt street, and is built adjacent to the municipal destructor or garbage crematory. This destructor supplies some steam for the operation of the electric station, which the electric undertaking must accept, and at times to the apparent detriment of its own operation. The buildings are substantially built of brick, with steel-truss roofs, the engine room being in two parts with boiler house adjacent. Coal is received from a nearby canal and carted to the plant, where it is elevated on one side of the house to overhead bunkers by means of a conveyor, and distributed through chutes to one side of the boiler house, the other side receiving coal from the carts direct. This station has practically no coal storage capacity. The boiler installation consists of four B. & W. marine type boilers, of about 400 H. P. each, equipped with chain grates, and five Lancaster hand fired boilers of 175 H. P. each. The boiler houses are so arranged that it is impossible to go from one boiler room to the other without going outside of the buildings, about two hundred feet—a very bad arrangement in case of accident. The generating equipment consists of three vertical triple expansion engines, built by Browell, Lindley & Company, each direct connected to a 450 K. W. generator. Two of which generate alternating three-phase current, of 50 cycles, and 5,200 volts; and one, a double generator, supplies direct current at 440 volts, for the 3-wire system. These vertical engines have one large surface condenser with electric-driven air and water pumps capable of condensing for 1,000 K. W.

capacity. There are two Parsons turbines of 1,000 kilowatts each, 1,800 revolutions per minute. Each of these is direct connected to a pair of Siemens twin generators of the direct-current type, having corrugated armatures. The turbines are equipped with surface condensers, augomentors and Edwards motor-driven air pumps. Two Willans & Robinson's engines, direct connected to 80 K. W. bipolar direct current generators of the three-wire system complete the generating equipment. Condensing water is obtained from a nearby canal, a distance of about 300 feet. The water is pumped by electric-driven centrifugal pumps. The switchboard in the Kings Road station is elevated and built on an iron gallery. It consists of complete panels for the high-tension plant and also a full equipment for the low-tension three-wire direct-current system. The front of the building has been closed up to prevent the noise of the direct-current turbines from disturbing nearby residents, which interferes somewhat with the ventilation of the generating room.

The northern and southern sub-stations are substantial brick buildings in keeping with the residential surroundings, and the equipments which are identical each consist of one 200 K. W. induction motor of the A. E. G. manufacture, and two motor-generators of 150 K. W. each of the twin generator type. The three balancing stations previously mentioned are of the vault type, built under ground, two of them under the street and one in the park. There are eight small motor-generators and balancers at the various sub-stations, averaging about 25 K. W. each.

*Newcastle—Supply.* The properties operated by this company supplied single-phase alternating current with individual house transformers in the city of Newcastle up to within say five years ago, when its generating station was located near the heart of the city, at Pandon Dene. In 1902 a generating station was built by the Walker & Wallsend Union Gas Company at Neptune Bank, which is on the extreme eastern side of the city; but about the time of its completion a deal was entered into between the gas company and electric supply company, whereby the electric interests of the former were absorbed by the latter.

The Neptune Bank station is built on practically modern lines with parallel engine and boiler houses. It contains eight 500 H. P. land type Babcock & Wilcox boilers and economizers. The coal is received by railroad siding, dumped directly in front of the boilers and trimmed by hand to automatic stokers. The generating equipment consists of four 750 K. W. engine-driven, and one 1,500 K. W. turbine-driven units. These units are all three-phase, 6,000 volt alternators and supply current to various motor-driven sub-stations and static transformers. The plant is not well situated for condensing purposes and a cooling tower has been installed in addition to a large brick pond with many individual sprays to assist in cooling the circulating water, consequently, though originally well designed, its efficiency is not equal to that of the Carville station.

The main generating station, and the last one built, is at Carville, further to the eastward and outside the city limits. This is probably the most economically constructed, best designed and most flexible as regards extensions of any station that we have investigated. The site is a plot of about fifteen acres, with ample frontage on the River Tyne, and adjacent to high level railway service. The engine and boiler houses are of heavy steel construction covered with corrugated iron. The coal supply comes from the high level railway over a steel trestle, and is then switched directly over the coal hoppers in the boiler house where it is dumped. The design of the plant provides for steam turbines, but the head room of the engine house is high enough for large vertical engine units; and as it will be necessary to have proportionally greater boiler house area than for generating requirements, the boiler house is built at right angles to the generating house. The boiler equipment consists of ten 1,000 H. P. Babcock & Wilcox marine-type boilers, and two Green's economizers, each of sufficient capacity to take care of one side of the boiler house. The draught is augmented and regulated by induced draught fans. To meet the enlargement under way the present boiler house is being duplicated. The generator equipment consists of two 2,000 and two 3,500 K. W. Parsons turbo-alternators with electric-driven condenser pumps and auxiliary apparatus. The condensers are of the surface type provided with augomentors to maintain high vacuum. There is space for a 5,000 K. W. turbine, which with two others of the same size were being installed at the time of inspection. A second boiler house of equal capacity to the first described was also being erected. This station generates three-phase alternating current of 6,000 volts, which is supplied to the various sub-stations of the company. It receives its condenser water direct from the river front, where a pump house with electric-driven pumps is installed.

The Newcastle Supply Company also controls the Priestman Power Company, whose station is situated south of the city in a place called Blaydon. At this point the Priestman Power Company owns and operates a colliery and two benches of forty coke ovens of the Otto-Hillsdorp type, from which the surplus gas, instead of being allowed to go to waste, is used under four land-type Babcock & Wilcox boilers of 500 H. P. each. These boilers supply steam for two 750 K. W. Parsons three-phase turbo-alternators, which supply current at 6,000 volts to this district and the Durham County distributing mains. The boiler and engine houses of this station are of steel construction covered with corrugated iron. The generating equipment is of the latest and best design, and the installation is such that should the coke ovens be abandoned, the equipment could be moved and erected elsewhere at minimum cost. Near at hand is a small brook from which feed water for the boilers is obtained, but not being sufficient for condensing purposes, it is necessary to use the condensing water over and over, hence a cooling tower and reservoir form part of the equipment.

The Priestman Power Company and the Durham County Company, though controlled by the Electric Supply Company, are

operated as separate holdings; therefore, though their sub-stations are listed, their properties are not considered in the valuation which covers only such properties as are in the name of the supply company. There originally was a power station at Durham, but it is now being superseded by high-tension underground distribution from the Carville plant, where step-up transformers are being installed to raise the transmission current to 22,000 volts. There are eleven sub-stations owned outright by the Electric Supply company, containing motor-generators and balancers. The Durham company controls four sub-stations of the same type, and the Electric Supply company owns jointly with the North Eastern Railway Company three sub-stations with motor-generators and rotaries. The North Eastern Railway Company also owns nine sub-stations, two of which contain motor-generators and the other seven static transformers. There are thirteen other sub-stations, the buildings of which are built on private property and belong to consumers. These contain static transformers only, which are owned by the company and are accounted for. In addition to these sub-stations there are three storage batteries containing 908 cells, with a total of 4,500 ampere hours discharge, one at the Carville generating station and two at sub-stations.

*Newcastle—District.* The Newcastle and District Company was started fifteen years ago and installed its apparatus in some buildings on the Forth Bank, which were originally used for factory purposes. As the output grew, this installation was increased until in 1902 a large power house was built on the adjacent property now known as the Close station. In 1904 another station was built at Newburn, a suburb to the west, to supply the territory in this vicinity.

The Forth Bank station was built at the time when Parsons was introducing his first turbines, and it was originally equipped with about five small turbo-alternators, some of which have since been discarded and others added, so that it now contains three 500 and six 150 K. W. A. C. turbo-generators of 1,000 volts and 80 cycles. The boiler room contains eight 200 H. P. Lancashire boilers and three Green economizers. This station receives its coal by a high level railway from which the coal is dumped and shoveled into hoppers that feed the conveyor which supplies the small hoppers in the boiler room. This station is operated condensing, receiving its water from the nearby river. The buildings being old are rather dilapidated and would have to be rebuilt should the station be continued much longer, but it is understood that the company intends to abandon it as soon as contemplated extensions at the Close station are completed. The Close station is well situated on the bank of the Tyne across the street from and nearly opposite the Forth Bank station. Both of these stations are practically in the heart of the city.

The Close station, having been built about two years ago, is of modern design, brick and steel construction. The boiler room and engine houses are parallel with each other and can be readily

extended. This station has no railroad siding, the coal being hauled direct from the colliery by carts, but there is a convenient boat landing on the river, where the coal may also be received by barge and mechanically lifted by clam shell buckets. The boiler equipment consists of five Stirling boilers of about 600 H. P. capacity each, with automatic stokers, overhead hoppers and conveyors for coal and ashes; and two additional boilers are being installed. The generating equipment consists of two twin D. C. Parsons turbo-generators of 1,500 K. W. each, with Parsons vacuo-augomentor condensers, and two 1,000 K. W. generators direct connected. The condensing water is pumped direct from the river. Generally speaking, this station is a well designed D. C. station and should generate cheaply.

The Newburn station, located at Lemington, near Newburn, about four miles to the west of the city, is of good construction, with modern parallel boiler and engine houses of steel and brick, and is situated on the river front, where ample condensing water is obtainable. The coal is hauled from the boat landing about 200 yards distant, and dumped direct into overhead hoppers in the boiler room. The boiler equipment consists of three 200 H. P. Lancashire boilers with individual economizers, and the engine house contains two 410 and one 150 K. W. D. C. Parsons turbo-generators, which were originally located in the Forth Bank station. The territory covered by this plant is rather small and at present not very profitable, but supplies the need and maintains the company's rights and powers in the district. The District company is in a peculiar position in Newcastle. From the general appearance of the situation, it seems that it will be absorbed either by the city or the Electric Supply company in a short time. In fact, from its method of operation and classification of accounts, it appears evident that its managers have had this subject before them for some time. For instance, it will be noted that depreciation charges have been small, probably owing to this fact or because its two recent generating stations, being practically new, may have been considered by the company to show no depreciation.

This company has a fine storage battery sub-station centrally located in a hired building back of the "Chronicle" office. It is new and of the Tudor type, equipped with a booster and a motor-generator for building up individual cells.

*London—City.* The sole main generating plant of the City of London Electric Lighting Company is located at Bankside and Love Lane, on the south side of the Thames, in Southwark. The site is an irregular piece of land a trifle over three acres in area, extending to the river front, and is occupied almost entirely with buildings. The station buildings are massive brick and steel structures, of ample size for the units now installed. There are two main boiler rooms not connected with each other. The larger room contains 46 Babcock & Wilcox boilers, running from 700 to 900 H. P. each, connected to three large brick chimneys—two 13 feet diameter and one 16 feet diameter—and all over 200 feet in height

and equipped with induced draught apparatus. The second boiler house contains twelve dry-back marine boilers of about 500 H. P. each, which are connected with induced draught equipment to the south stack. The boilers have a total capacity of 41,000 rated H. P. Coal is delivered by barge at the river front and elevated by Gantry cranes, from which it is distributed by conveyors to hoppers above the boilers. The coal is then fed to the boilers direct by chutes to the automatic chain grate stokers. The original engine room is built adjacent to and parallel with the large boiler house. It contains eight 500 K. W., 2,300 volt Brush alternating current units, and eight 700 K. W. Willans & Robinson direct current units. In addition, there are four Willans & Robinson engines of 350 H. P. each, direct connected to two Ferranti A. C. generators of 350 K. W. each and in the north end of the same house are two Ferranti engines of 3,000 H. P. each, direct connected to A. C. generators of 1,500 K. W. each. The units just stated constituted the original generating equipment of this plant, but it has been added to by extending the engine room to the south and building an additional engine room to the west end on the other side of the second boiler house. The equipment of these additional generating rooms consists of three Allis engines of 2,500 H. P. each, direct connected to three 1,000 K. W. direct-current generators; also four Musgrove engines direct connected to four 2,000 K. W. direct-current generators. The total equipment equals 42,900 H. P. in engines operating direct-current generators to the capacity of 11,000 K. W. and alternating-current generators to the capacity of 10,900 K. W. The switchboard of the first generator house is mounted on an elevated gallery built along the east wall. The new units have a separate switchboard equipment supported on an overhead gallery at the side of the generators. This plant is equipped to operate condensing and it has been necessary to install an automatic water screening device designed by the engineer to prevent the condensers from becoming choked with foreign matter in the river water, which is taken from a sump built out into the Thames and operated by steam-driven centrifugal pumps.

On this same property the company has erected two large well equipped workshops capable of handling practically all repairs of the plant, in addition to which some outside work is taken to keep it busy at all times. The offices of the general manager and engineering staff are located here, as well as the experimental department, and a fairly well equipped electrical and physical laboratory. There are many smaller buildings erected adjacent to the main generating house containing a carpenter shop and various store rooms. On the south front, on Sumner street, the company was compelled to erect seven three-story brick cottages for employees.

The company has numerous small sub-stations in the City of London, some of which are under the thoroughfares and others on private property. At the present time many of these have been changed over to supply direct-current with balancers to equalise

the current on the three-wire system. There are also, in some of these sub-stations, motor generators to convert the alternating current to direct-current, which is fed in on the low-pressure three-wire system. The main station also has several of these motor generators that at present can be used to convert alternating current to direct current and direct current to alternating current as it is necessary to care for the prevailing load.

The load conditions of this plant are rather peculiar, as a very dark day or a dark storm in the afternoon causes an enormous demand for lighting in the City of London, at times increasing the load by a jump of 10,000 kilowatts. This unusual condition during certain seasons of the year makes it necessary for the company to carry from 5,000 to 10,000 H. P. in boilers continually under fire without being actually in use.

*Westminster.* There are at present three electric generating stations of the Westminster Company, one called the Millbank station, which is on the Grosvenor road and the Thames river, south of the Houses of Parliament; the second is on Eccleston place, west of the Victoria Railway station, and the third is on Davies street, near the intersection of Oxford and New Bond streets. In addition to these three generating stations, the company buys current from the Grove Road station of the Central Electric Supply Company, Ltd., which is a large, modern, high-tension, alternating-current station, situated near St. John's Wood road. The three generating stations are in a sense also sub-stations, as they contain motor-generators, transforming a 6,000 volt alternating current from the Grove Road station to 400 and 200 volt direct current. On Duke street the company has a large sub-station that is used for transforming A. C. to D. C. current only.

The Millbank station contains seventeen units, with a total capacity of 2,546 K. W. These units are all of the direct-current 400-volt type, operating on the three-wire system, and are composed of eight III Willans & Robinson engines direct connected to bi-polar 225 K. W. generators; five II 112 K. W. units of the same type, and four G. G. 44 K. W. units of the same type. These engines receive steam from eleven hand-fired B. & W. boilers, with economizers for about one-half their capacity, and a motor-driven induced-draught fan equipment. The station receives its coal by barge from the Thames, and has an overhead storage bin over the boilers. Over the forward part of the engine room and boiler room is a sub-station that contains the motor-generators and over the back part of the boiler and engine rooms is a storage battery. The buildings are of substantial brick construction, with heavy steel girders supporting the second floors, which support motor-generators and battery. The equipment is composed of small units, but being run condensing, is fairly economical. The property on which this station is built has been purchased from the company by the London County Council, and the station will probably be abandoned in the course of the next two or three years, another site having been given to the company in exchange for this property. The

station supplies direct current at 200 volts on each side of the three-wire system, with the exception of two units that supply the lighting for the Houses of Parliament at 110 volts.

The Eccleston plant has a total capacity of 2,673 K. W. in 16 units. There are nine III 220 K. W. each, five II 120 K. W. each, and two G. G. 44 K. W. each; all of the direct-connected Willans-Robinson type. There are two boiler houses; one contains twelve dry-back 200 H. P. boilers with return smoke tubes, and the other house contains eight 300 H. P. boilers of the same type, all hand fired. Four economizers are connected to the first twelve boilers. The stack is 10 x 175 feet, supplying natural draught for the twelve boilers, but an auxiliary induced-draught fan and iron chimney is provided for the eight large boilers. All coal is carted to the station, which has a storage capacity of about 180 tons. This station is run partial condensing to the extent of about 1,300 K. W., for which purpose water is received and delivered through two 16-inch pipes running to and from the Thames over a distance of about one-third of a mile, hence its efficiency is naturally curtailed to some extent. The buildings are of very substantial brick construction, with heavy plate steel girders spanning the engine and boiler rooms. Those girders support a sub-station containing four 225 K. W. motor-generators that receive high-tension alternating current from the Grove Road station and transform it to 400 volt direct current for the general distribution system. There is also on the second floor a storage battery of 210 cells of 600 ampere hour capacity. A motor room has also been erected over the engine room, and a new transforming room is being built adjacent to the new boiler house. The piece of property adjacent to the station contains some brick sheds, one of which is rented as a school and the others are used for storage for the mains and distribution department.

Davies Street station. This station has a total capacity of 2,786 K. W. and 16 units, as follows: ten III 225 K. W. each, four II 112 K. W. each and two G. G. 44 K. W. each. The boiler rooms are in two sections, one on each side and parallel to the generating room. There are ten boilers, dry-back, smoke-flue type, of 5,000 pounds water evaporation capacity each in the first room; in the second room are six dry-back, smoke-flue boilers of 6,000 pounds capacity each, and two B. & W.'s of 5,000 pounds capacity each. This station is not equipped with economizers and is run entirely without condensers. There are four exhaust steam water heaters and one stack, 11 feet diameter by about 150 feet high, for natural draught. All coal is carted, and the station has a storage capacity of about 300 tons. The building has five stories above the basement on Davies street and four stories on the side street. It is quite ornamental and very substantial. The two upper stories are used as flats for dwelling purposes. Over the first boiler room is a sub-station containing four 500 K. W. motor-generators. There is also in addition one 1,000 K. W. motor-generator in the engine room. For low tension generation and distribution, these three

stations are well located, but in the last two instances, being devoid of facilities for the delivery of coal other than by carts and, in one case obliged to operate non-condensing, their efficiency, therefore, though favorable to their type at the period of their advent, is under that of modern practice. All of these stations will serve well as sub-stations, for which purpose they may be solely used in time.

The Duke street sub-station is located about 200 yards from the Davies street station, on Duke street, just south of Oxford street. This station occupies a piece of property about 200 feet long and 75 feet wide. It is built on a most elaborate plan and in accordance with conditional stipulations placed upon the company by the Duke of Westminster. Provision has been made on the roof of the structure for a public garden and recreation ground. The general construction is of elaborate stone work, with massive ornamental entrances at both ends; the top with roof garden rises to a height of twelve feet above the surrounding streets. The sub-station is formed by an excavation to a depth of some twenty feet, which makes the building about 200 feet long, 60 feet wide and 25 feet high. The interior is beautifully finished with brick tiling and is large enough to contain a capacity approximating 25,000 K. W. in motor-generators. At present half the building has been finished and provides space for from twelve to fifteen thousand K. W. capacity.

*St. James.* The St. James company has two generating stations, the main station at Carnaby street, Golden square, and the old station at Masons yard, near St. James square, which was the original station, but at present is only manufacturing periodically and operated in emergency, and is now used as a regular sub-station.

The Carnaby street station is located in the northern-central part of the district of supply on Carnaby street, about two blocks south of Oxford street. It is a very substantially constructed building and has three stories containing, in addition to the boilers and generating units, a sub-station, a small battery room, meter repair and testing shops, as well as the general executive and commercial offices of the company. The boiler house equipment consists of fourteen dry-back marine boilers of 250 H. P. each, six dry-back marine boilers of 500 H. P. each, one B. & W. water-tube boiler of 620 H. P., and four locomotive boilers of 400 H. P. each. In addition there are three elevated thermal storage boilers containing hot water of steam temperature for increasing the capacity of the boilers at time of maximum load. The engines and generators are as follows: Two Willans & Robinson 1,200 H. P. each, direct connected to generators of 780 K. W. capacity; two Willans & Robinson 810 H. P. each, direct connected to generators of 520 K. W. each; four Willans & Robinson 360 H. P. each, direct connected to generators of 260 K. W. each; four Willans & Robinson 300 H. P. each, direct connected to generators of 180 K. W. each; one Willans & Robinson 200 H. P. each, direct connected to

generators of 120 K. W. each. The above generators are all of the direct-current type and feed directly into the low-pressure, three-wire distribution system. There is also a small storage battery of 180 ampere hours capacity. The miscellaneous equipment consists of a water softening plant with storage tank, a deep well and pump and four Berryman feed water heaters. The sub-station equipment in this station consists of: One direct-coupled, 6,600 volt to 240 volt motor-generator, of 520 K. W. capacity; three direct-coupled motor-generators of the same voltage as above, of 260 K. W. capacity; two rotary converters of 40 K. W. capacity, and one rotary converter of 15 K. W. capacity. The sub-station converts the high-tension current received from the Grove road station, of the Central London Company, and distributes to the general direct current low-pressure distribution system. There are two stacks, each 8 feet in diameter by 200 feet high. This station, being isolated from railway and water supply, is non-condensing, and necessarily receives all coal by carts, which is dumped in front of the boilers, which are hand fired. The area of supply of this company is the Parish of St. James, which contains no railway or canal for transportation purposes and no body of water for condensing purposes. Consequently in view of these deficiencies, though it is well located for low tension generation and distribution, it cannot operate with such high efficiency as it might if site conditions were more favorable to economic production.

The Mason yard station is in a substantial brick building in the lower part of which is the power station, which extends out under the sidewalks, covering a considerably greater area underground than the building proper. The equipment consists of: Two Willans & Robinson engines of 450 H. P., direct connected to 310 K. W. generators; one Willans & Robinson engine of 360 H. P., direct connected to 260 K. W. generators, and one Willans & Robinson engine of 300 H. P., direct connected to 180 K. W. generators. These generators are of direct-current type and feed into the general low-pressure, three-wire system. Steam is supplied from five locomotive boilers of 400 H. P. each, and one Babcock & Wilcox water-tube boiler of 300 H. P. The station is equipped with one stack, induced draught and Berryman feed water heaters. All coal and ashes are necessarily carted. As this plant is only run in cases of emergency and to carry over the peak load during the heavy load season, it is the intention of the company to shut it down as a generating station as soon as enough power is received from the Grove road station to displace it. It is admirably situated for a sub-station, which will eventually be its sole purpose.

The converting equipment now consists of two direct-coupled motor-generators of 520 K. W. capacity each, transforming A. C. current of 6,600 volts to 240 D. C. There is also one balancer of 26 K. W.

*Central.* The Central company's generating station, called the Grove road station, is on Grove road, near St. John's Wood. The property is about 880 feet long and an average depth of 300

feet, and covers an area of six acres, and has a railroad siding connecting with the Great Central Railway. The general plan for the development of this plant is for the erection of the station in the form of six sections or units, one of which has now been erected The engine and boiler house equipment of this unit, though in operation, is not entirely complete. The foundation, however, for the stack of the second unit is in place.

The purpose of this station is to generate electricity of the alternating, three-phase, 6,600 volts system, and transmit to the St. James and the Westminster companies. The equipment at the time of the examination consisted of ten Climax vertical boilers of 1,200 H. P. each, capable of evaporating 40,000 pounds of water per hour each. These are arranged in three lines in the boiler house, which is about 110 feet square (there is room in this boiler house for four more Climax boilers of the same type). The coal for these boilers is received from the railway direct, being dumped in a hopper and elevated by means of three sets of conveyors into two overhead bunkers, having a capacity of 700 tons, from which the coal is fed to the boilers by means of chutes. The generator house is about 120 feet by 105 feet, of rather expensive construction and rising to a height of about 75 feet. The generating equipment in this building consists of three Willans & Robinson's 3-V engines of about 1,200 H. P. each, direct connected to generators of 780 K. W. capacity each. There are three 3-X engines of 2,400 H. P. each, direct connected to three Oerlikon generators, and one Bellis & Morgan engine of 2,500 H. P., direct connected to one 1,560 K. W. generator of the A. E. G. manufacture. In addition, there are three small units of the Willans & Robinson 2-I type, 150 K. W. each, two of them being direct-current, 200 volts, and one three-phase alternating current. The high-tension switchboard is erected on an elevated gallery overlooking the entire station.

There is installed in this plant four Berryman feed water heaters, six Duplex Weir pumps for boiler feed purposes and a water-purifying plant. In the centre of the boiler house is a very elaborate stack, 260 feet high by 18 feet. An extension is erected adjacent to the boiler house about 130 feet long and 25 feet wide, which is used as a general repair shop and stores. On the south side of the property is the Regent's Canal, which enables the present installation to run condensing, but which will have to be reinforced later by the addition of cooling towers. The design of this building is quite elaborate and presents an ornamental front on the North Bank side, which is occasioned by its situation in a section of the city that contains residential and well constructed properties.

## DISTRIBUTION SYSTEMS.

H 3. Give brief description of distribution systems.

The electric distribution system of each undertaking examined is laid underground, which is in compliance with orders of the Board of Trade.

*Manchester.* This plant has probably the most expensive and complicated direct-current low-tension distribution system of any examined. The centre of the city, being almost entirely served by the five-wire and three-wire systems, with the exception of a small section of the two-wire and four-wire systems, but all recent installations are being made by extending the three-wire system to the abolishment of the two, four and five-wire systems. The mains are all laid on the Callender solid system, being fed by feeders laid partly solid and partly drawn in fibre conduit.

The mains leading from the Stuart street station are first carried through a tunnel about three-fourths of a mile long, from which they branch out to the general system. The high-tension feeders from this station are all armored cables laid solid in the earth, and run to the various sub-stations where the high-tension alternating current is converted to the low-tension direct current.

The distribution system still contains some copper strip, but it is being rapidly displaced, as it has been the cause of considerable trouble through short circuiting.

There are now in service 9,029 consumers' meters, all of the ampere-hour type, which are tested and repaired at the Polygon sub-station meter repair shop.

*Liverpool.* The distributing mains are almost entirely of the Callender solid system, being laid in iron troughs filled with pitch. Some of the high-tension cables, however, were armored and laid solid.

Lister Drive station, being about two miles from the centre of the city, necessitates a sectional area of about eighteen square inches of copper conductors being run to convey the low-pressure direct-current to the heart of the city. All of the high tension, alternating current produced by the undertaking is generated at the Lister Drive station.

The several small steam driven stations generate low-tension direct current, which is delivered entirely by means of the three-wire feeders connected into the general distribution system of the city.

There are about 7,000 consumer's ampere-hour meters installed, principally of the Chamberlain & Hookam and the Ferranti types, all of which are tested and maintained at the Fairclough sub-station shops.

*Glasgow.* The general distribution system consists of low-tension cables of the "triple concentric" type, most of them being lead sheathed and laid solid in the earth. The service taps from these conductors have special connections and fittings that were designed by the local management, being quite complicated and expensive, and we believe if the system was to be relaid that the individual solid conductor would be favored. The high-tension cables are feeders leading from the generating station to the sub-stations and are laid principally in earthenware ducts, although there are a few cables, both high tension and low tension, that are laid in wooden troughs filled with pitch.

Pressure wires from the distant supply point of each feeder lead back to recording instruments in the station, thus automatically indicating in the station a record of the pressure at the extremity of each feeder.

The consumers meters, of which there are about 16,000 in service, all record ampere hours instead of watt hours, and consist alomst entirely of the Chamberlain & Hookam, and Ferranti types, with some Wright maximum demand meters still in service.

*St. Pancras.* The system is the three-wire 440 and 220 volts low-tension, direct-current type, and consists almost entirely of lead-covered armored cable laid direct in the ground and covered with boards. There are still some three-wire mains of 220 and 110 volts in use, which consist of the old style copper strip, laid in the early '90's, but they are being rapidly displaced. The high-tension cables connecting the main generating station with the sub-stations are laid solid in wooden troughs filled with pitch, and consist principally of three-core cables.

There are now 2,763 consumers meters in use, mostly of the Chamberlain & Hookam ampere-hour type, which are repaired, tested and handled generally from a meter repair shop at the rear of the Pratt Street office.

*Newcastle—Supply.* This company's high tension distribution system consists of cables from Neptune Bank to Newcastle, laid in clay ducts on the drawn-in system. This system has 133 manholes, which are about seven feet long, four feet wide and six to ten feet deep. All the high tension lines from the Carville station and from the Priestman Power station are armored and laid solid in iron, wood and earthen troughs, filled with pitch. The low-tension, direct-current, three-wire system consists of both the solid three-cored cables and solid single cables laid in troughs filled with bitumen.

There are 3,800 meters of both the ampere-hour type and the kilo-watt hour type. These meters are tested, repaired and handled in the meter testing shop at the Pandon Dene sub-station.

*Newcastle—District.* The distribution work is composed of two systems of mains. Those conveying alternating current are of the Silvertown make laid on the drawn in system; while those conveying low-tension direct current are principally of the Silvertown type with some Callender make, laid on the solid system in cast-iron troughs filled with pitch. The former carry alternating current at 1,000 volts, while the latter are for the 480-240 volt direct-current three-wire system. All extensions are being made on the direct current system, and the alternating current system will be eventually abandoned for commercial service. This company has about 1,240 small manholes, where the service connections are made. These are laid generally under the footpaths (sidewalks).

There are 1,540 consumer's meters of the ampere-hour type, which are tested and repaired at the Close power station shops.

*London—City.* The distribution system consists of both alternating high-tension and three-wire low-tension systems. The major portion of the work for the alternating system is composed of cables drawn in wrought iron pipe and bitumen casing, most of the cables being concentric and lead-covered with paper insulation, requiring connections of a special and rather complicated form for making branch joints. The more recent direct-current system consists principally of a special Callender type of cable, laid in iron troughs and filled with bitumen. There are about 6,013 small man-holes or hand holes, about two feet six inches square and deep, from which the service connections are made. There are also junction boxes at the corner of each street, enabling the sections to be registered for the equalization of the pressure.

The distribution system has been particularly sub-divided so that the smallest possible section may be isolated as occasion requires without inconveniencing a great part of the main system. Pilot pressure wires indicate at the station the terminal pressures of all the feeders.

There are about 14,400 consumer's meters in use of various types, consisting principally of the Thomson watt hour type, with some Hookam, Ferranti and other makes of both ampere hour and watt hour types; all handled, repaired and tested in the shops at the main generating station, Bankside, Southwark.

*Westminster.* The distribution system consists principally of armored insulated cables drawn in wrought iron and cast iron pipe, all laid in casings filled with bitumen. There is still, however, in use some bare copper strips on insulators, but the recent work consists of three-cored cables drawn in bitumen fibre ducts. The high-tension cables from the Central Electric Supply Company's power station connecting with the sub-stations are of the three-cored lead sheathed, steel armored type and drawn into iron pipe.

This company has about 9,524 consumer's meters installed, principally of the ampere hour type, and of various makes, which are handled and repaired in the company's shops at Eccleston place.

*St. James.* Most of the low tension system is lead-sheathed, steel-armored cable, laid direct in the ground; but some of the old system is still in use, consisting of copper strip supported on insulators in cast iron troughs. There are also small quantities of cable insulated with vulcanized covering drawn in bitumen casing, and of lead-covered cable drawn in earthen ware ducts. The services are all lead sheathed, steel armored cables laid in the ground. All of the low tension mains are single cored cables. The high tension cables from the Central Electric Supply Company's power station connecting with the sub-stations are of the three-cored lead-sheathed type, steel-armored type drawn into iron pipe.

There are 3,652 consumer's meters, principally of the Ferranti and the Hookam ampere-hour types, which are handled, repaired and tested in the meter repair shop at the Carnaby Street station.

*Central.* This company delivers only high tension alternating current in bulk from its generating station at Grove Road to the sub-stations of the St. James and Westminster companies. All of which current is conveyed by three-cored, lead-sheathed, steel-armored cables drawn in iron pipe.

H 4. Summarize methods of supplying current. (See also H 2 and H 64.)

*Manchester.* This undertaking furnishes direct current exclusively for commercial lighting, power service and about 94 street arc lamps which is distributed by the three and five-wire systems, with some small sections of two and four-wire systems. The five-wire system supplies current at 440, 220 and 110 volts. Alternating current is also generated at 6,600 volts for transmission to sub-stations where it is converted into both direct current for the three-wire commercial system and into direct current at 500 volts for the operation of the city's entire tramway department.

*Liverpool.* Electricity is supplied by the city for commercial lighting, power purposes and about 193 street arc lamps, in addition to all of the current used by the city's tramway undertaking. Direct current of 480 and 240 volts by the three-wire system is supplied exclusively to consumers. Alternating current at high tension—6,600 volts—is generated for purposes of transmission to the sub-stations, where it is converted into direct current of the above voltage for commercial purposes, and also to 500 volts direct current for street railway purposes.

*Glasgow.* The city supplies electricity for commercial lighting, power purposes and about 827 street arc lamps. Consumers are supplied entirely with direct current by the three-wire system, at 480 and 240 volts. High tension alternating current of 6,500 volts is generated at the main stations and delivered to sub-stations, where it is transformed into direct current for commercial service.

*St. Pancras.* This borough supplies electric service by the three-wire, direct-current system for commercial lighting, power and 792 street arc lamps at 440 and 220 volts. Alternating current is generated at 5,200 volts, transmitted to sub-stations and converted to above system.

*Newcastle—Supply.* This company generates three-phase alternating current at 6,000 volts and 40 cycle, exclusively, but distributes for commercial and power purposes both alternating and direct current. The alternating current being converted at sub-stations or on the consumers' property, and the direct current is generated by motor-generators driven by alternating current at sub-stations, whence it is distributed by three-wire direct current system at 500 and 250 volts. This company also supplies current for railway purposes to the Northeastern Railway, which is converted into direct current at 600 volts for this service. It supplies no street lighting, with the exception of eight arc lamps in Walker.

*Newcastle—District.* This company has two systems of supply at present. The original, of which there is considerable in use, distributes alternating current at 1,000 volts to sub-stations and to consumers' premises, where it is reduced by static transformers to 100 volts. The second is a three-wire system supplying direct current at 480 and 240 volts. Commercial lighting and power only is supplied by this company, there being no street lamps nor tramways operated by it.

*London—City.* Electricity is supplied by this company for commercial lighting, power and under municipal contract for 502 street arc lamps. The old system supplies high tension alternating current to the consumer, which is transformed locally to various voltages. Direct current by the three-wire system is furnished for general consumption at 450 and 225 volts, and is generated at substations which receive high tension alternating current at 2,300 volts direct from the main generating station.

*Westminster.* This company supplies electricity by the three-wire system at 400 and 200 volts direct current for commercial lighting, power and under municipal contract for 956 street arc lamps. In addition it has a few units which generate direct current at 110 volts supplying the Houses of Parliament. Like the St. James company, aside from the current generated at its main stations, it purchases a large portion of high tension alternating current from the Central Electric Company (of which it is a part owner), which is transformed at its sub-stations into direct current for commercial distribution.

*St. James.* This company exclusively supplies direct current by the three-wire system at 240 and 120 volts for commercial lighting, power and under municipal contract for 66 street lamps. Like the Westminster Company, aside from the current generated at its main stations, it purchases a large portion of high tension alternating current from the Central Electric Company (of which it is a part owner), which is transformed at its sub-stations into direct current for commercial distribution.

*Central.* High tension three-phase alternating current at 6,000 volts is exclusively supplied by this company in bulk to the St. James and Westminster companies (to which it jointly belongs), and is reduced at the sub-station of these companies to low tension direct current for general distribution.

H 5. Steam plant.

| | *Steam Engines.* | | *Boilers.* | |
|---|---|---|---|---|
| *Towns.* | *No.* | *Total H.P.* | *No.* | *Total H.P.* |
| Manchester | 22 | 57,000 | 69 | 55,100 |
| Liverpool | 83 | 42,224 | 88 | 36,000 |
| Glasgow | 18 | 16,250 | 25 | 17,200 |
| St. Pancras | 21 | 8,367 | 21 | 5,167 |
| Newcastle—Supply | 12 | 23,055 | 18 | 14,000 |
| Newcastle—District | 16 | 11,190 | 18 | 6,400 |
| London—City | 29 | 42,900 | 58 | 41,000 |
| Westminster | 49 | 13,240 | 53 | 13,500 |
| St. James | 17 | 8,420 | 31 | 11,030 |
| Central | 10 | 13,600 | 10 | 12,000 |

## H 6. Dynamos.

| *Towns.* | *No.* | *Type.* | *Voltage.* | *K.W.* | *Total K.W.* |
|---|---|---|---|---|---|
| Manchester ..... | 14 | D.C. | 400-500 | 16,300 | |
| | 8 | A.C. | 6,500 | 16,500 | 32,800 |
| Liverpool ..... | 76 | D.C. | 500 | 22,370 | |
| | 7 | A.C. | 6,000 | 13,300 | 35,670 |
| Glasgow ..... | 19 | D.C. | 600 | 10,460 | 10,460 |
| St. Pancras..... | 19 | D.C. | 120 & 240 | 5,350 | |
| | 2 | A.C. | 5,200 | 900 | 6,250 |
| Newcastle—Supply ..... | 3 | D.C. | 240 | 450 | |
| | 11 | A.C. | 6,000 | 17,000 | 17,450 |
| Newcastle—District ..... | 7 | D.C. | 480 | 5,970 | |
| | 9 | A.C. | 1,000 | 2,400 | 8,370 |
| London—City ..... | 7 | D.C. | 450 | 11,000 | |
| | 20 | A.C. | 2,300 | 10,900 | 21,900 |
| Westminster ..... | 49 | D.C. | 400 | 7,995 | 7,995 |
| St. James ..... | 17 | D.C. | 240 | 5,540 | 5,540 |
| Central ..... | 2 | D.C. | 200 | 300 | |
| | 8 | A.C. | 6,600 | 8,730 | 9,030 |

All were direct connected. The A.C. dynamos were 3-phase.

H 7. Appraisal of plant.[1]

| | *Man. chester.* | *Liver- pool.* | *Glasgow.* | *St. Pancras.* | *Newcastle —Supply* | *Newcastle —District.* | *London —City.* | *West- minster.* | *St. James.* | *Central.* |
|---|---|---|---|---|---|---|---|---|---|---|
| Land | £100,450 | Note.[a] | £45,512 | £41,747 | £49,448 | £45,841 | £161,223 | £49,560 | £126,207 | £136,092 |
| Buildings | 429,647 | £165,704 | 181,677 | 34,211 | 115,139 | 53,712 | 194,253 | 126,427 | 54,182 | 103,988 |
| Boilers | 70,080 | 92,300 | 25,800 | 23,500 | 40,300 | 14,700 | 170,000 | 59,150 | 47,035 | 56,000 |
| Steam engines | 164,300 | | | | | | | | | |
| Steam Tur. Gen'rs. | 16,400 | 146,320 | 94,308 | 38,950 | 108,500 | 46,840 | 118,650 | 35,783 | 39,800 | 51,390 |
| Dynamos | 48,700 | | | | | | | | | |
| Transformers, motor generators, etc. | 140,910 | 64,800 | 18,100 | 7,850 | 53,838 | 8,225 | ..... | 49,150 | 12,750 | ..... |
| Storage batteries | ..... | 5,265 | 9,000 | ..... | 17,921 | 6,400 | 33,000 | 1,935 | 400 | 500 |
| Switchboards | | 66,588 | | 9,813 | 43,137 | 11,375 | 57,280 | 34,575 | 13,078 | 9,000 |
| Auxiliary apparatus | 104,184 | 96,050 | 64,640 | 24,200 | 70,800 | 32,000 | 142,000 | 34,157 | 14,230 | 27,000 |
| Underground lines | 623,402 | [b]553,238 | 660,813 | [b]214,766 | 306,096 | 161,831 | 573,907 | 387,442 | 82,382 | 39,538 |
| Paving | | | | | | | | 81,312 | 12,672 | |
| Lamps, arc | ..... | 3,860 | ..... | 1,334 | 3,915 | ..... | ..... | ..... | 528 | ..... |
| Lamps, incandesce't | ..... | ..... | ..... | ..... | | ..... | ..... | ..... | ..... | ..... |
| Motors | 8,645 | ..... | ..... | ..... | [c]123,740 | 31,174 | 3,500 | ..... | ..... | ..... |
| Meters | 20,691 | 21,000 | 42,297 | 8,257 | [c]22,902 | 18,112 | 43,107 | 26,667 | 10,225 | ..... |
| Miscellaneous[d] | 44,321 | 15,000[e] | 5,500 | 1,250 | ..... | 2,750 | 34,040 | 9,648 | 1,385 | 2,500 |
| Property | ..... | ..... | ..... | ..... | ..... | ..... | 48,877 | ..... | ..... | ..... |
| Total | £1,771,730 | £1,230,125 | £1,147,647 | £405,878 | £955,736 | £432,960 | £1,579,837 | £895,806 | £414,874 | £426,008 |

[1] These figures must not be taken as strictly accurate, but approximately as correct as could be ascertained by superficial examination.

[a] No data was obtainable on land belonging to this department, as it was not listed separately in the department's inventory, except in one instance, where the small sum of £7,624 was stated, which probably applied only to the site of the new Lister Drive station. Consequently this appraisal is necessarily submitted exclusive of land values.

[b] As we were unable to get a detailed description of the underground system, including subways, ducts, mains and services, it has been impossible to estimate its value, and the figures given here represent the published amounts of the capital value of all work under this head.

[c] Railway connections.

[d] Teams, tools, shop equipment, etc.

[e] Including installations.

H 8. Meters, services and consumers.

| | *Mileage of Streets Served.* | *No. of Meters.* | *No. of Services.* | *Total No. of Consumers.* | *No. of Power Consumers.* | *Total H. P. Connected.* |
|---|---|---|---|---|---|---|
| **Manchester** | 128 | 9,029 | 5,729 | 5,729 | 1,298 | 12,000 |
| **Liverpool** | (?) | 7,000 | 6,091 | 6,091 | 800 | 6,281 |
| **Glasgow** | 132 | 16,459 | 12,645 | 12,645 | 1,353 | 9,366 |
| **St. Pancras** | (?) | 2,763 | 2,763 | 2,763 | (?) | (?) |
| **Newcastle—Supply** | (?) | 3,800 | 3,329 | 3,941 | 179 | 45,848 |
| **Newcastle—Dist.** | (?) | 1,540 | 1,000 | 980 | (?) | (?) |
| **London—City** | 77 | 14,409 | 7,400 | 11,960 | (?) | 9,430 |
| **Westminster** | 77 | 9,524 | 7,836 | 7,836 | 628 | 5,160 |
| **St. James** | 12 | 3,052 | 2,265 | 2,265 | 335 | 1,207 |
| **Central** | Note[1] | ..... | ..... | ..... | Note[2] | ..... |

H 9. Were all services metered?

Yes, except at Glasgow, where about 8% of the services were not metered.

H 10. Lamps connected.

| | *No. of Arc Lamps, Public Lighting.* | *No. of Arc Lamps in Commercial Use.* |
|---|---|---|
| **Manchester** | 94 | 3,609 |
| **Liverpool** | 193 | 2,384 |
| **Glasgow** | 827 | (?) |
| **St. Pancras** | 792 | 1,197 |
| **Newcastle—Supply** | 8 | 167 |
| **Newcastle—District** | ... | 280 |
| **London—City** | 502 | (?) |
| **Westminster** | 956 | (?) |
| **St. James** | 66 | (?) |
| **Central** | ... | .... |

H 11. Current generated and bought, in units (k. w. h.).

| | *Delivered at Switchboard.* | *Bought.* | *Total.* |
|---|---|---|---|
| **Manchester** | 47,170,721 | ..... | 47,170,721 |
| **Liverpool** | (?) | ..... | (?) |
| **Glasgow** | 20,340,556 | 1,243,532 | 21,584,088 |
| **St. Pancras** | 8,025,553 | ..... | 8,025,553 |
| **Newcastle—Supply** | 40,972,807 | ..... | 40,972,807 |
| **Newcastle—District** | 6,513,904 | ..... | 6,513,904 |
| **London—City** | 23,121,642 | ..... | 23,121,642 |
| **Westminster** | (?) | 4,717,700 | (?) |
| **St. James** | 6,654,217 | 2,385,260 | 9,039,477 |
| **Central** | 7,102,960 | ..... | 7,102,960 |

[1] Only trunk mains and the stations of the two distributing companies supplied.

[2] All of the current is sold to the Westminster and St. James companies.

H 12. Consumption of current in units.

| | *Used at Works and Offices.* | *Sold.* | *Unaccounted. for.*[1] | *Total.* |
|---|---|---|---|---|
| Manchester | 3,292,842 | 33,686,710 | 10,191,169 | 47,170,721 |
| Liverpool | (?) | 31,452,323 | (?) | (?) |
| Glasgow | 1,025,516 | 18,248,468 | 2,310,104 | 21,584,088 |
| St. Pancras | 378,337 | 6,655,774 | 991,442 | 8,025,553 |
| Newcastle—Supply | 3,865,308 | 30,378,852 | 6,728,647 | 40,972,807 |
| Newcastle—District | 136,089 | 5,183,834 | 1,193,981 | 6,513,904 |
| London—City | 700,451 | 20,957,648 | 1,463,543 | 23,121,642 |
| Westminster | 178,692 | 14,899,170 | (?) | (?) |
| St. James | 162,037 | 7,815,545 | 1,061,897 | 9,039,477 |
| Central | Nominal. | 7,102,960 | ..... | 7,102,960 |

No current was supplied free in any instance.

H 13. Analysis of current sold.

| | *Street Lighting.*[2] | *Private Lighting.* | *Commercial Power.* | *Street Railways.* |
|---|---|---|---|---|
| Manchester | 81,032 | 9,939,381 | 4,739,992 | 18,926,305 |
| Liverpool | 283,479 | 8,692,187 | 2,337,036 | 20,139,621 |
| Glasgow | 1,525,505 | 12,016,934 | 4,706,029 | ..... |
| St. Pancras | 1,607,800 | 5,047,974 | | ..... |
| Newcastle—Supply | 155,703 | 2,551,713 | 20,570,750[3] | 895,807 |
| | | 6,204,879[4] | | |
| Newcastle—District | ..... | 1,878,936 | 3,304,898 | ..... |
| London—City | 1,355,384 | 17,789,351 | Note[5] | 1,812,913 |
| Westminster | 1,979,962 | 10,699,294 | 2,219,914 | ..... |
| St. James | 148,549 | 7,666,996 | Note[5] | ..... |
| Central | Note[6] | Note[6] | Note[6] | ..... |

H 14. Maximum and minimum output, in units.

| | *Daily Capacity of Plant. (Rated Capacity of Generators.)* | *Maximum Day's Output.* | *Minimum Day's Output.* |
|---|---|---|---|
| Manchester | 32,800 | 18,745 | 6,706 |
| Liverpool | 35,670 | 153,043 | 44,000 |
| Glasgow | 10,460 | 13,437 | 4,800 |
| St. Pancras | 6,250 | (?) | (?) |
| Newcastle—Supply | 17,450 | 171,574 | 47,662 |
| Newcastle—District | 8,370 | 40,964 | 6,302 |
| London—City | 21,900 | 162,509 | 16,301 |
| Westminster | 7,995 | 88,300 | 11,120 |
| St. James | 5,549 | 44,360 | (?) |
| Central | 9,039 | (?) | (?) |

[1] Due to loss in transformation, drop on lines, meters, etc.

[2] Current used for lighting public buildings and offices is included in private lighting.

[3] Of this amount 11,411,884 units were sold to the North Eastern Railway Company.

[4] This was the amount of current sold in bulk to other companies. Possibly some of it may have been resold for public lighting and street railway traction, but it was impossible to ascertain how it was divided.

[5] Included with private lighting.

[6] The output of the Central company was taken by the Westminster and St. James companies, and appears in the items given for these companies, but, of course, its use is not separately reported by either.

H 15. Does the undertaking own all the underground conduits it uses?

Yes, in every instance.

H 16. Give population, and current sold, per service, per consumer and per capita, in units.

| (1) | (2) | (3) | (4) | | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| *Plants.* | *Population of Area of Supply.* | *Sales to Private Consumers and Public Lighting Only.* | *Sales Per Capita.* | | *Sales Per Service.*[1] | *Sales Per Consumer.*[2] | *Population Per Service.*[3] |
| Manchester | 606,824 | 14,760,405 | 24.3 | | 2,576 | 2,576 | 106 |
| Liverpool | 704,134 | 11,312,702 | 16.1 | | 1,857 | 1,857 | 116 |
| Glasgow | 760,423 | 18,248,468 | 24.0 | | 1,443 | 1,443 | 60 |
| St. Pancras | 235,000 | 6,655,774 | 28.3 | | 2,409 | 2,409 | 85 |
| Newcastle—Supply | 357,000 | 11,866,282 | 33.2 | 45.5[5] | 3,565 | 3,011 | 113 87 |
| Newcastle—District | 250,000 | 5,183,834 | 20.7 | | 5,184 | 5,290 | 250 |
| London—City | 50,242 | 19,144,735 | 381.1[4] | | 2,587 | 1,601 | 7[4] |
| Westminster | 128,025 | 14,899,170 | 116.4[4] | | 1,901 | 1,901 | 16[4] |
| St. James | 20,000 | 7,815,545 | 390.8[4] | | 3,451 | 3,451 | 9[4] |
| Central | ..... | ..... | ..... | | ..... | ..... | .. |

[1] Obtained by dividing the sales given in column 3 by the number of services given under H 8.

[2] Obtained by dividing the sales given in column 3 by the number of consumers given under H 8.

[3] Obtained by dividing the population given in column 2 by the number of services given under H 8.

[4] The resident populations of the City of London and that portion of Southwark supplied is only 42,576, and of the St. James district about 20,000; hence the current sold per capita is large and presents figures valueless for comparison. The load is principally a day load and current is used mostly for lighting office buildings, and for power purposes in small factories and shops.

[5] The areas of supply of the two Newcastle companies overlap. The population of the combined areas of the two companies is 375,000. The average per capita sales—45.5—is obtained by dividing the total sales by 375,000.

## CHARACTER OF SERVICE.

H 17. Are consumers' meters removed and tested at regular intervals? How often?

*Manchester.* Generally tested every 12 months to see if meter will start with one lamp burning.

*Liverpool.* Not regularly; only when doubtful.

*Glasgow.* Regularly every four years; oftener if there be any doubt as to accuracy.

*St. Pancras.* A man regularly conducts a rough test on consumer's premises; if the meter is suspected, it is brought in and tested. Circuit is made in about five months.

*Newcastle—Supply.* Lighting meters once a year; large power meters twice a year.

*Newcastle—District.* Yes, on the average every three years.

*London—City.* Annually; generally *in situ.* Meter department reports on all meters once a year.

*Westminster.* Yes, at intervals of three years.

*St. James.* Yes. Time of inspection depends upon class of meter. Clock meters are very frequently tested.

*Central.* The Central Company does not distribute to consumers. Under all inquiries relative to distribution, it is omitted in the following pages therefore.

H 18. If a consumer believes that the meter is fast, how may he have it tested?

*Manchester.* By payment of a fee of 10s. 6d., which is returned if meter is found to be faulty.

*Liverpool.* Ditto; fee is 10s.

*Glasgow.* By application to the electricity department.

*St. Pancras.* By the London County Council. The electrical department tests and stamps all meters.

*Newcastle—Supply, District.* By application to company. If consumer is not satisfied, he may call upon city testing department. If meter is wrong, company pays; if right, consumer pays.

*London—City, Westminster, St. James.* By applying to company or to officials of London County Council, who decide. Consumer pays testing charge if meter is correct; company pays and rebates overcharge if meter is fast.

H 19. Are there records of proofs of meters as removed?

*Manchester.* Where meters are removed for testing, a record is kept of the results of such tests.

*Liverpool.* All test records are kept in books for such purposes.

*Glasgow.* Either a check meter or a recording ampere meter is placed in circuit with the permanent meter, and the record so obtained gives the result.

*St. Pancras.* Records of all tests are kept in books, and in a very complete card system.

*Newcastle—Supply.* On cards and in books; very complete information. Records show course and listing of each individual meter.

*Newcastle—District.* Records of tests are kept in books.

*London—City.* Certificate of London County Council is filed. Tests of every meter as removed are recorded.

*Westminster.* Yes, in books.

*St. James.* Book of tests and files of London County Council certificates are kept. Reports are made fortnightly to directors.

H 20. What means are being taken to extend use of electricity? (See also inquiry H 21.)

*Manchester.* Energetic canvassing and following up of prospective consumers, hiring out of motors, radiators, etc. A show room of appliances is provided, and consumers are instructed in the use of appliances if necessary.

*Liverpool.* None other than low rate. Information is given to consumers desiring instructions.

*Glasgow.* A canvasser is employed. Electrical contractors (60) naturally solicit business for their own interest, that is, to get house installation contracts. Instructions are given to consumers if desired.

*St. Pancras.* A show room, canvassers, circulars and advertisements in two local papers. Canvassers instruct consumers in the use of appliances.

*Newcastle—Supply.* There are two special canvassing departments, one dealing in power and one in lighting. These departments have trained canvassers who are competent to deal with all problems, both commercial and engineering. The company also advertises by means of circular letters, monthly pamphlets and other devices issued by special advertising department. In many cases practical demonstrations are given. Motors, heating and cooking appliances are rented to consumers on easy terms either on hire system or hire-purchase system. Exhibitions are periodically held and any special appliance is shown under working conditions in the company's show room.

*Newcastle—District.* Canvassers, advertising in periodicals, stands at electrical exhibitions and circulars. There are no show rooms. Instructions are given to consumers if necessary.

*London—City.* Circulars and canvassers. No show rooms. Area includes factories and business places only. Hence men are seen at business places, and canvassers interview and make propositions in person; show rooms would not be visited, the engineer says. Instructions are given to consumers if necessary.

*Westminster.* Canvassing and exhibitions. Instructions are given to consumers if necessary.

*St. James.* Rather extensive staff of canvassers. One man visits non-burners; another technical man seeks motor business. At general office the use of appliances is explained. Inspectors also give instructions if desired. No show rooms. Pamphlets and bulletins are issued.

H 21. Are appliances carried in stock for sale or rent?

*Manchester.* Yes; motors, radiators, etc., for rent only.

*Liverpool.* The department gives estimates and installs complete equipment for lighting or power service to be connected with its supply mains. A complete line of electrical supplies is carried in stock for this purpose.

*Glasgow.* The department has power to raise money for the purchase of motors to rent to consumers, but this power has not been exercised. Private dealers in electrical appliances have taken this up.

*St. Pancras.* No; fittings and appliances are kept at show rooms, but the department has no power to sell or supply. Attendants instruct persons how to operate, and urge purchase of local contractors. Department considers this a drawback.

*Newcastle—Supply.* Yes, for both purposes.

*Newcastle—District.* No; but at the request of consumers appliances are purchased and installed.

*London—City.* Yes; radiators, motors, lamps, etc.

*Westminster.* No.

*St. James.* Arc lamps generally; will order appliances. Interior work referred to contractors.

H 22. State fully the methods of testing current regulation and character of service.

*Manchester.* Pressure wires or potential lines from 12 city feeding points are brought back to indicating volt meters in the central station which produce a constant record of the variations in potential, which are recorded in daily log during peak loads.

*Liverpool.* By volt meters in the generating and sub-stations, which constantly indicate the pressure at feeding points.

*Glasgow.* By recording instruments in main stations and substations, which constantly show the volts and amperes at the point where each feeder taps the distribution system.

*St. Pancras.* By recording instruments at generating stations and at Chief Engineer's office; potential wires from all feeders, and in some cases from points in distribution system.

*Newcastle—Supply.* All feeders have special volt meters in station denoting the voltage at extreme end of feeders. Recording volt meters are fixed periodically in certain consumers' premises.

*Newcastle—District.* On the direct current system volt meters are installed in the power stations, indicating the voltage at the extreme end of each feeder.

*London—City.* By recording voltage charts on bus bars at station and distribution points of feeders and some customers' services. Services are tested for grounds.

*Westminster.* By recording volt meters on feeders.

*St. James.* By recording volt meters on all feeders; also on potential wires from feeder terminals.

H 23. Summarize results of such examinations.

*Manchester.* The results are entered in a daily log. If the potential is low in any district, the voltage in that section is strengthened, and on entire system if necessary.

*Liverpool.* They are read hourly and entered by an attendant in the log book.

*Glasgow.* Record shows at a glance what the conditions are at all feeding points, and if not normal, the superintendent of mains is notified and such readjustments are made as may be necessary for proper operation.

*St. Pancras.* Voltage is maintained generally in good shape. On two evenings voltage dropped nearly 30 volts owing to turbine troubles.

*Newcastle—Supply.* Said to be very good and that voltage is kept up to standard. The records seen confirm this. Balancing load was recorded daily at sub-stations, and load was equalized generally.

*Newcastle—District.* Voltage maintained; if low, strengthened.

*London—City.* Voltage said to be uniform. Charts seen were uniform.

*Westminster.* The engineer says that no complaint has been made of irregular voltage for at least ten years.

*St. James.* Voltage said to be constant by the manager.

H 24. Were outages frequent?

*Municipalities.* No.

*Newcastle—Supply, District.* No.

*London—City.* Very few; current never off mains; failures of 49 out of 2,264,000 lamp hours.

*Westminster, St. James.* No.

H 25. What system of inspection was used to see whether all lamps were burning?

*Manchester.* The few street lighting electric arc lamps in use were inspected by employees of the gas department, while attending to the gas street lighting.

*Liverpool.* Patrol and police.

*Glasgow.* Inspectors and trimmers who switch on lamps.

*St. Pancras.* Trimmers visit all lamps once after circuit is on; police report afterwards. Street lighting systems are arranged so

that every alternate street lamp is on the same circuit, thus making two circuits in every street. These alternate circuits are supplied from different generating stations, so that in case of failure of either station the streets would not be wholly dark.

*Newcastle—Supply, District.* Practically no street lamps.

*London—City.* Nightly inspection, as company is fined 5 shillings per lamp hour for outages.

*Westminster.* Not stated.

*St. James.* Two men on duty at night were detailed especially from outside staff.

H 26. Was service supplied 24 hours of the day?

Yes, in every case.

H 27. Did voltage fluctuate?

*Manchester.* No excessive fluctuations.

*Liverpool.* Under 5 per cent; no charts.

*Glasgow.* Four per cent. allowed.

*St. Pancras.* Variation within permissible limits of Board of Trade regulations—5 per cent.

*Newcastle—Supply.* No excessive fluctuations.

*Newcastle—District.* Voltage within 5 per cent.

*London—City.* Very little; within 2 per cent., according to engineer.

*Westminster.* No charts; about 2 volts, according to engineer.

*St. James.* No, according to engineer.

H 28. Were any engineering tests or experiments being carried on?

*Manchester.* Frequently. Engines were indicated; steam consumption and efficiency tests made.

*Liverpool.* Engine and efficiency tests frequently.

*Glasgow.* Yes, on meters and instruments in laboratory and generating appliances in stations.

*St. Pancras.* Nothing novel; usual coal tests.

*Newcastle—Supply.* Always with a view to give the best possible supply most efficiently.

*Newcastle—District.* Engines and turbines are tested frequently.

*London—City.* Yes.

*Westminster.* No.

*St. James.* Frequent tests.

H 29. Were there frequent complaints about interruption of service?

*Manchester.* Not within the last five years; previously there were because of bare conductors in ducts (see H 30).

*Liverpool, Glasgow, St. Pancras.* No.

*Companies.* No.

H 30. Has the electric lighting supply ever been cut off from the city? Describe instances.

*Manchester.* Prior to five years ago, the bare strip conductors in the ducts sagged together, causing short circuits, which cut out sections of the distribution system, but this has been remedied by eliminating these bare conductors and by replacing them with insulated conductors.

*Liverpool, Glasgow.* No.

*St. Pancras.* About eight years ago, the supply was interrupted for several days. The wires were all laid in one pipe and a general fusion took place.

*Newcastle—Supply.* No.

*Newcastle—District.* The continuous current was off once for a few hours in a certain district in November, 1904, at 5 A. M., owing to a gas explosion caused by a breakdown in a junction box.

*London—City, Westminster, St. James.* No, according to the engineers in charge.

**EXTENSIONS.**

H 31. What factors have determined the extent and location of extensions?

*Manchester.* Probable demand chiefly.

*Liverpool, Glasgow.* Applications from intending consumers.

*St. Pancras.* Commercial returns; amount of revenue must be at least 20 per cent. of cost of carrying out work. Wherever mains are laid street arcs are installed.

*Newcastle—Supply.* Building of new estates outside of city limits; the additional power being asked for from time to time.

*Newcastle—District.* Applications and commercial reasons.

*London—City.* Commercial demand, and statutory obligations.

*Westminster.* Not stated.

*St. James.* Commercial demands; but all territory is covered.

H 32. Is the built-up area well served, so that all citizens may use the service?

*Manchester.* All main parts of city are served.

*Liverpool, St. Pancras.* Yes.

*Glasgow.* Apparently very thoroughly served.

*Newcastle—Supply.* Yes. City is divided with the "District" Co.

*Newcastle—District, London—City, St. James.* Yes.

*Westminster.* Not stated.

H 33. Has the policy in respect to extensions been liberal?

*Manchester, Liverpool, St. Pancras.* Apparently, yes.

*Glasgow.* Yes, with reasonable prudence.

*Newcastle—Supply, District, London—City, St. James.* Yes.

*Westminster.* Not stated.

H 34. Total length of extensions during past year.

*Municipalities.*

| | |
|---|---|
| Manchester | [1] 38,454 feet |
| Liverpool | (?) |
| Glasgow | 110,000 feet |
| St. Pancras | (?) |

*Companies.*

| | |
|---|---|
| Newcastle—Supply | 31,680 feet |
| " —District | (?) |
| London—City | 21,504 feet |
| Westminster | 10,560 feet |
| St. James | (?) |

H 35. Have the citizens of any section petitioned for extension to their district within the last five years?

*Manchester.* Yes, and the city has taken over several provisional orders for outlying districts. Frequent petitions within city limits were generally granted.

*Liverpool.* In the event of extension of mains to give an applicant supply of electrical energy, the district is canvassed to see if the demand is likely to justify the cost of the extension; otherwise the applicant is required to sign a guarantee to take or pay for electrical energy equal to 20 per cent of the cost of such extension for two years.

*Glasgow.* No.

*St. Pancras.* Only in case of street arc lighting. Two deputations were received in the last two years. Had determined to do the work, but people were impatient.

*Newcastle—Supply.* No; individual cases only.

*Newcastle—District, London—City, Westminster, St. James.* No.

H 36. As between several sections petitioning at one time, how were extensions determined, and in what order?

*Manchester.* In order of demand and importance.

*Liverpool.* According to probable requirements and importance.

*Glasgow, St. Pancras.* Have never had such a case to decide.

*Newcastle—Supply, London—City.* No such case.

*Newcastle—District, Westminster.* Not stated.

*St. James.* No such occasion. Would be supplied in order of receipt.

[1] Total laid was 78,687 feet, less 40,233 feet taken up.

H 37. Were extensions made promptly when there was a demand?

*Manchester, Liverpool, Glasgow.* Yes.

*St. Pancras.* As promptly as possible—say 4 to 8 weeks. Hindrances due to delay on part of other official departments.

*Companies.* Yes, according to officials, but it was necessary to get a permit to open streets.

H 38. Was every applicant for service able to get it promptly?

*Manchester.* So stated.

*Liverpool.* See inquiry H 35.

*Glasgow.* Yes.

*St. Pancras.* Reasonably so; new services had to wait for approval of committee.

*Companies.* Yes, according to the engineer in charge.

H 39. Has the necessity for passage of an ordinance ever caused delay in extending the service?

*Manchester, Liverpool, Glasgow.* No.

*St. Pancras.* Had to wait approval of Council; delay not over four to eight weeks.

*Companies.* No, but have to get permit to open street.

H 40. Has service been extended in advance of the demand in order to stimulate the growth of a district, or has it awaited demand?

*Manchester.* Yes, sometimes two years ahead of demand.

*Liverpool.* Generally awaited demand.

*Glasgow.* Service never laid unless a certain revenue can be guaranteed for the first three years.

*St. Pancras.* Demand for street lighting has necessitated that mains be installed ahead of commercial business.

*Newcastle—Supply.* Extended in advance of demand.

*Newcastle—District.* Sometimes extended ahead of demand, but generally practice is to await demand.

*London—City.* Inquiry does not apply to City of London.

*Westminster, St. James.* Yes, according to engineers.

H 41. Was the department free to use its judgment about extensions, or was an ordinance required authorizing the extensions?

*Manchester.* When Parliamentary powers have been given, it is necessary to cover the area of supply as demand requires.

*Liverpool.* No ordinance necessary; department free to use its own judgment.

*Glasgow.* The committee and engineer decide the policy to adopt.

*St. Pancras.* Ordinances authorizing work passed by Council.

*Newcastle—Supply.* Free to use its judgment in area of supply.

*Newcastle—District.* Always makes extensions free and anxious to get business. No authority necessary where powers are held.

*London—City, Westminster, St. James.* Yes, free to use own judgment.

H 42. May service be extended to suburban sections not within the city limits? State fully the conditions upon which this may be done.

*Manchester.* Parliamentary powers must be obtained to extend lines without city limits into adjacent areas demanding it, and several sections are now so supplied.

*Liverpool, Glasgow.* Parliamentary authority must be obtained.

*St. Pancras.* Cannot go outside of borough limits.

*Newcastle—Supply, District.* Yes, by virtue of Acts of Parliament certain outside territories may be supplied.

*London—City, Westminster, St. James.* No, only within prescribed limits.

STREET WORK.

H 43. Was street work done by direct employment or contract?

*Manchester.* Principally by the department's own staff.

*Liverpool.* All by contract.

*Glasgow.* Laying of mains by employees of department.

*St. Pancras.* Both; nearly all by direct employment in late years.

*Newcastle—Supply, Westminster.* Both.

*Newcastle—District.* Direct employment except in one case.

*London—City.* Both; by far the greater part by direct employment.

*St. James.* Both; excavation by contract sometimes; other work direct.

H 44. Was the work done by contract properly inspected?

*Manchester, Liverpool.* Yes, according to officials.

*Glasgow.* None done by contract.

*St. Pancras.* The engineer says no, judging from the work.

*Companies.* Yes, according to the officials.

H 45. Was the work performed in an efficient manner?

*Manchester, Liverpool.* Yes, apparently.

*Glasgow.* Apparently so; well done but expensive.

*St. Pancras.* Some of the old contract work was poorly done.

*Companies.* Yes, according to the officials.

H 46. Was the street surface properly restored after openings were made?

*Manchester, Liverpool.* Yes, in accordance with street regulations.

*Glasgow.* Yes, by a separate department of the city, and the cost charged to electricity department.

*St. Pancras.* Department restores temporarily; survey department makes permanent repairs and charges electric department.

*Companies.* Yes, temporarily by the company or its contractors and permanently by the local authorities.

H 47. Was water used in puddling ditches?

No, not in any case.

H 48. Were open trenches and obstructions properly guarded?

Yes, in every instance.

H 49. How were sunken trenches taken care of?

The law requires that they shall be properly guarded until repaired. In municipal plants the repairing was done by another department and the cost charged to the electric department. In the case of companies, the city did the repairing and charged the cost to the company.

H 50. What has been the policy in regard to improving the condition of street service prior to street paving or repaving?

*Manchester.* Most underground work has been done ahead of street improvements if possible.

*Liverpool.* Subject to agreement between departments; no regular work done ahead of improvements.

*Glasgow.* The city engineer makes sure before a street is paved whether the various departments of the city wish to lay pipes, mains, etc.

*St. Pancras.* Mains and services have been overhauled before paving if department had knowledge of any defects.

*Newcastle—Supply.* Paving is generally done before services are laid, but inspections and repairs are always made before a street is resurfaced or improved.

*Newcastle—District.* Mains are overhauled ahead of improvements if necessary.

*London—City.* If new mains or renewals are required, they are carried out when streets are being paved.

*Westminster.* Policy has been to take advantage of street openings when possible, but not to delay work waiting for street improvements.

*St. James.* Notice is given by local authorities, and advantage of this is taken to overhaul distribution system.

H 51. Is there an up-to-date map showing the location and nature of all street mains and fixtures?

Yes, in each instance.

H 52. Who decides where underground structures shall be located in the street?

*Manchester.* The electrical engineer and highways department.

*Liverpool.* The electrical engineer.

*Glasgow.* Electrical engineer and city engineer.

*St. Pancras.* Engineer of electrical department acts according to certain rules laid down.

*Companies.* Each company, subject to the approval of the local authority.

H 53. Is a permit from a public authority required before street may be opened and for each opening?

*Manchester, St. Pancras.* No.

*Liverpool, Glasgow.* Yes.

*Companies.* Yes.

## PURCHASE OF MATERIALS.

H 54. Who placed the orders for materials, and who governed the placing of orders?

*Manchester.* Chiefly let by yearly contract (engineer has latitude under £100) confirmed by electricity committee.

*Liverpool.* The electrical engineer through his committee.

*Glasgow.* Council.

*St. Pancras.* Council committee with advice of engineer.

*Newcastle—Supply.* Purchasing and construction departments.

*Newcastle—District.* The engineer.

*London—City.* The chief engineer or manager and secretary.

*Westminster, St. James.* General manager.

H 55. Were contracts advertised?

*Municipalities.* Yes, required by statute.

*Companies.* No, except possibly in exceptional cases.

H 56. What system was used to check the quality of materials, and weights or measurements of shipments?

*Manchester.* Checked by various storekeepers; all materials inspected, weighed, measured and examined by laboratory tests.

*Liverpool.* The storekeeper checks against standard samples, and books quantities and full particulars of all materials that he receives; also checked by auditor against invoice.

*Glasgow.* Heads of departments check the quality, and storekeepers check weights and measurements.

*St. Pancras.* Checked by storekeepers and chiefs of each department; separate storekeepers for each department.

*Newcastle—Supply.* By storekeeping staff and engineering departments.

*Newcastle—District.* Coal was tested and recorded; all materials were weighed.

*London—City.* Various systems, according to nature of goods, but all goods were subject to test and strict examination.

*Westminster, St. James.* Storekeepers check quality and quantity.

H 57. What redress is there in case of shortages or poor quality?

Shortages have to be made up or credit given. Material may be rejected and credit claimed.

H 58. Were the dealers supplying materials connected with the local or central governments?

*Municipalities.* No.

*Newcastle—Supply.* No.

*Other companies.* Not stated.

H 59. Were local dealers favored over those outside of the city?

*Manchester.* No, except under equal conditions.

*Liverpool.* Yes, as a rule.

*Glasgow, St. Pancras.* No.

*Newcastle—Supply.* As far as possible.

*Newcastle—District.* No.

*London—City, Westminster.* Not stated.

*St. James.* Yes, all things being equal.

H 60. Was there delay in placing orders after the engineer or superintendent expressed the necessity for the supplies?

No, according to the officials of each undertaking.

H 61. In practice did the manager get the types and makes of things he asked for, or was he forced to take something else?

The official of each plant reported that he got what he wanted.

H 62. Were bills for materials purchased paid promptly?

*Manchester.* At end of month after receipt of bills.

*Liverpool, Glasgow, St. Pancras.* Yes, monthly.

*Newcastle—Supply, St. James.* Yes, monthly.

*Newcastle—District, London—City, Westminster.* Yes.

## CONDITION OF PLANT.

H 63. Is the plant adequately equipped to handle the business?

*Manchester, Liverpool.* Yes.

*Glasgow.* Yes; additions and extensions are kept in advance of demand.

*St. Pancras.* Yes—the present business.

*Newcastle—Supply.* Yes, and well designed to make extensions quickly and cheaply.

*Other Companies.* Yes.

H 64. Is the equipment of modern and efficient type? (See also H 2-4).

*Manchester.* Not entirely; there is considerable old type apparatus, complicated piping and divided boiler installations. The central part of the city is supplied by the 5-wire system, which is complicated and out of date. All recent equipment is modern and embraces the larger part of the plant.

*Liverpool.* Rather too many small units and stations, due to original design. There are 83 units generating, about 50 of which are small and are widely scattered about the city. Pumpfield and Lister Drive (1st section) units are of modern design, but only 700 k. w. each. The second section of Lister Drive, however, contains turbo-generators of the latest high-tension type. The boilers are all of the Lancashire type, except the second section of Lister Drive which has Babcock & Wilcox boilers. The new sub-station equipment is modern and efficient. There are 5 refuse destructor plants scattered about the city that supply steam to electric generating stations. These stations contain 17 units, aggregating 2,580 k.w. The method of operation necessitates that these units be run continually and must always have their load independent of other station operation.

*Glasgow.* Yes, largely. There are several small units at each station that will require replacing shortly. In new equipment, some combination direct-current alternating-current dynamos were installed; these were to generate either class of current, and large static transformers to step up the alternating current were installed; but up to the present time, they have not been run as alternators.

*St. Pancras.* Some machines are modern and efficient; some 10 or 12 years old; small units are not efficient.

*Newcastle—Supply.* Yes, turbines of largest size.

*Newcastle—District.* The new stations are very modern; all Parsons turbines and direct current, located in center of city. The old Forth Banks station was selected temporarily, but added to gradually. Contains Parsons turbo-alternators, small units, single-phase, alternating current, 1,000 volts. Will be shut down shortly. Several turbo-alternators transferred to Close station to look after the A. C. load. New Close and Newburn stations were recently constructed, 1902-1905. Located so as to use direct current. All Parsons turbines of most improved type. Aided by a storage battery in center of commercial district.

*London—City.* Yes, new installations since 1898. Some old Brush machines to be scrapped. Plant condensing from river. Coal from barge.

*Westminster.* Generating units rather too small and too numerous for best efficiency. Sub-stations are up to date and well equipped.

*St. James.* Can hardly be called modern according to present standards; for a non-condensing plant, it is efficient.

*Central.* New and modern.

H 65. Is it in good condition?

*Manchester.* All in apparently good serviceable condition.

*Liverpool.* Yes, so far as seen.

*Glasgow.* First class order.

*St. Pancras.* Only fair. The old units should be discarded. The new turbines are noisy and run very hot.

*Newcastle—Supply.* Yes.

*Newcastle—District.* The old Forth Banks station is in rather dilapidated shape; supplies single phase A. C.; will shortly be shut down.

*London—City, Westminster, St. James, Central.* Yes.

H 66. Will it be necessary to make extensive repairs or alterations in the near future?

*Manchester.* Apparently not under ordinary conditions.

*Liverpool.* Probably not in the nature of repairs, but for better efficiency some of the small generating stations will have to be abandoned as such and converted into sub-stations, which will mean discarding old generating apparatus.

*Glasgow.* No, but improvements are constantly being made, replacing small units.

*St. Pancras.* Depends upon the progress of business.

*Newcastle—Supply, District.* No.

*London—City.* Plant can carry easily heaviest load so far; extensions subject to demand.

*Westminster, St. James, Central.* No, the Central Company will be able to furnish what amount the Westminster and St. James companies need.

H 67. Was the plant in neat and clean condition?

*Manchester, Liverpool.* Yes.

*Glasgow.* Very neat and clean.

*St. Pancras.* Moderately so.

*Newcastle—Supply.* Yes, considering the construction work under way.

*Other Companies.* Yes.

H 68. Were the works adequately ventilated?

*Manchester, Liverpool, Glasgow.* Yes.

*St. Pancras.* Regents Park station, yes; Kings Road station, no. Kings Road station was well designed for ventilation, but owing to the noise of the direct current turbines, many windows have been cemented up, and now the building is quite close even with forced ventilation.

*Companies.* Yes.

H 69. Were the pits, shafts and machinery properly guarded?

Yes, in every case.

COMPLAINTS.

H 70. Were the offices for payments, complaints and other business conveniently located?

*Municipalities.* Yes, near centre of city.

*Newcastle—Supply, District.* Yes, in centre of city.

*London—City.* Yes, near centre of district (works office south of Thames).

*Westminster.* Quite convenient.

*St. James.* Main office in centre of district supplied.

H 71. Were consumers' complaints promptly and efficiently attended to?

Yes, in each instance, so far as could be ascertained.

H 72. Describe office system of handling complaints.

*Manchester.* They are received by telephone, letter or in person at the Town Hall, entered in a complaint book, and a slip given to electrical engineer or representative who has them attended to by an inspector. The slips (with nature of complaint and details stated thereon) are then entered in record and filed.

*Liverpool.* Received by letter, telephone or in person and turned over to proper persons to investigate, adjust and report.

*Glasgow.* Complaints are registered in general office and handed to superintendent of mains who gives them immediate attention. In his absence the complaint is taken care of at once by men on duty, and a report of same is submitted to him afterwards.

*St. Pancras.* Received at main office. Engineer enters in book and attends to some personally; others are handed to various departments, and some are dealt with by canvassers. When finished all are reported to engineer who directs correspondence personally. All complaints come up before the committee quarterly.

*Newcastle—Supply.* Special sub-department of consumers department promptly deals with all complaints.

*Newcastle—District.* No charge for complaint work. Complaints are received at general office or plant office, sent to distribution superintendent, recorded and when attended to duplicate record returned to engineer's office.

*London—City.* Complaints made at manager's and secretary's office are dealt with by men on duty there and, excepting pressure complaints or interruptions in service which are handled by engineering staff, are recorded and service done noted.

*Westminster.* Details not submitted.

*St. James.* Complaints are entered in complaint book; inspectors are sent out and report at once; nature of complaint and work done entered in book; tabulated fortnightly for directors.

H 73. How are leak complaints attended to at night?

*Manchester.* A special man is kept on duty to deal with consumers' troubles until 11 P. M., and for troubles on lines, all night.

*Liverpool, Glasgow.* By men on duty night and day.

*St. Pancras.* Men are on duty until midnight and can be reached all night if necessary.

*Newcastle—Supply.* By special men set apart for that duty.

*Newcastle—District.* Foreman is available all night.

*London—City.* Complaints are handled at any hour day or night; emergency men on at night.

*Westminster, St. James.* Not stated.

## STAFF AND RECORDS.

H 74. Is there a system of badging or uniforming the employees so that they may be known to the public?

*Manchester.* Means of identification are provided when required by special order or card. Certain grades wear uniforms.

*Liverpool.* Three meter readers only are uniformed.

*Glasgow.* No, but all meter readers and others who come in contact with the consumers have a book or card which identifies them.

*St. Pancras.* No; each man carries a card of authority.

*Newcastle—Supply.* Complaint men are uniformed and all others tending to consumers' needs.

*Newcastle—District.* No; they use passes.

*London—City.* Men entering consumers' houses have metal identification badges.

*Westminster.* Meter readers, yes.

*St. James.* Meter readers, yes. All employees outside have an identification card.

H 75. Are the general morale and discipline of the employees good, bad or indifferent?

*Manchester.* Apparently very good.

*Liverpool, St. Pancras.* Good, according to engineers.

*Glasgow.* Apparently excellent.

*Newcastle—Supply.* Excellent.

*Newcastle—District.* Said to be very good.

*London—City, Westminster, St. James.* Good, according to officials.

H 76. Are the employees who meet the public polite and attentive?

*Manchester.* Very courteous.

*Liverpool, Glasgow, St. Pancras.* Yes, according to officials.

*Newcastle—Supply, District.* Yes.

*London—City.* Engineer says, have had no complaints to the contrary.

*Westminster.* Those seen, yes.

*St. James.* Yes, according to engineer.

H 77. Are they neatly dressed?

*Municipalities.* Yes.

*Newcastle—Supply, District, St. James.* Yes.

*London—City, Westminster.* Yes, suitable for their work.

H 78. Do the various departments work in harmony? Is there friction or jealousy, and does one department shirk work, leaving it to be done by another?

*Manchester, Liverpool, St. Pancras.* The officials in charge say all work in harmony.

*Glasgow.* Harmony prevails apparently and there appears to be no friction except in the nature of a friendly rivalry between the electricity department and the gas department.

*Companies.* All departments are said to work in harmony.

H 79. Is there an adequate system of telephones?

Yes, both public and private in each case.

H 80. Are the works and offices properly watched at night?

Yes, in each instance.

H 81. Are employees generally permitted to run to fires, or is some one appointed to go?

*Manchester.* Generally an installation inspector and mains foreman respond.

*Liverpool.* No, not necessarily. Consumers are responsible for all wiring and meters, etc. An electrician of the fire department always attends and takes care of electrical details.

*Glasgow.* The salvage corps, which is maintained as a branch or auxiliary of the fire department, has an electrician on its staff who attends all fires, and calls for assistance from electricity departments if required.

*St. Pancras.* No; receive notice and send man if necessary.

*Newcastle—Supply.* Special men are told off for fire service.

*Newcastle—District.* In case of fire, employees have various duties allotted to them.

*London—City.* Men appointed to go.

*Westminster, St. James.* Certain outside men attend fires.

H 82. Is there any system of inspection to prevent workmen of other companies or city departments from injuring the underground structures?

*Manchester, Liverpool, Glasgow.* Yes, all street openings are watched by inspectors.

*St. Pancras.* Yes, two men are detailed to watch all openings. Electricity undertaking receives notice of permits issued.

*Newcastle—Supply.* No special men, but all openings are watched and underground works inspected.

*Newcastle—District.* The mains department keeps track of all openings.

*London—City.* Yes, street inspectors always in touch with work done by other companies, builders and pavers.

*Westminster, St. James.* Inspectors watch all openings.

H 83. Has the manager maintained an adequate system of reports made to him of the details of the operation of the plant day by day, so as to show manufacturing results, cost per unit, length of underground or overhead structures, installed, etc.?

It is the general practice of municipal as well as company undertakings to keep records of the operation of the plant in very good shape, to use installing appliances that enable them to read carefully the weights and measurements of materials used, and also to adopt recording and indicating instruments which indicate the kilowatts and amperes at the stations as well as the voltage at the bus-bars and at the terminals of distribution feeders. Their methods of reporting to the committees in charge and board of directors are generally good and complete in detail.

*Manchester.* Yes, a daily log book of operation and a complete system of weekly and monthly reports are kept.

*Liverpool.* Book records.

*Glasgow.* Yes, a very complete system.

*St. Pancras.* Weekly returns.

*Newcastle—Supply.* Yes, a most complete report of operation and costs daily and weekly.

*Newcastle—District.* Yes, records kept in books; monthly balance sheet.

*London—City, Westminster.* Yes.

*St. James.* Yes, daily and weekly; load curves in detail.

H 84. Was there a drafting room maintained?

*Manchester.* Yes, at works' office, and surveyor's office, Town Hall.

*Liverpool, Glasgow.* Yes.

*St. Pancras.* Yes, rather unsystematic.

*Newcastle—Supply.* Yes, at office and constructing department.

*Other Companies.* Yes.

H 85. What system was in vogue to take care of the tools distributed to employees?

*Municipalities.* Tools are booked in and out by storekeepers to each employee, who is held responsible for the return of same.

*Newcastle—Supply.* Each department is responsible for the tools used by it, which are booked in and out.

*Newcastle—District.* The various foremen make a note of all tools distributed to employees.

*London—City.* Men appointed to check and supervise.

*Westminster, St. James.* Booked in and out, in storekeeper's books.

H 86. Were the different classes of workmen equipped with proper tools? Were the tools kept in order?

Yes, apparently so, in each instance.

H 87. With what promptness were orders to turn on current attended to?

*Manchester.* Promptly in order of receipt, if ready for connection, according to engineer.

*Liverpool.* Promptly, according to engineer.

*Glasgow.* Immediately, provided the rules and regulations of the department have been complied with.

*St. Pancras.* Have to receive approval of central office; if approved, promptly.

*Newcastle—Supply.* Immediately.

*Newcastle—District.* As soon as possible.

*London—City.* In many cases the same day, in order of receipt; all cases within a few days or when consumer is ready, according to engineer.

*Westminster.* Four days if street has to be opened; immediately, if not.

*St. James.* If service is in, in a few hours, according to manager.

H 88. Are service pipes run to every lot whether built upon or not, prior to street paving or repaving? If so, how many of these dead services are now in existence?

*Manchester, Liverpool, St. Pancras.* No, only as needed.

*Glasgow.* No, except that modern tenements of the better class, if near mains, are usually connected during building operations.

*Newcastle—Supply.* No; none.

*Newcastle—District.* Services are generally not run until the building is nearly completed.

*London—City.* Inquiry does not apply to City of London.

*Westminster.* Occasionally.

*St. James.* No such conditions.

H 89. Are records kept of services by date installed, so that as the service grows old an inspection may be made at intervals of years to determine when renewals should take place

and insure such renewal before most of the services have begun to give trouble?

*Manchester.* Yes, and by frequent inspection and tests.

*Liverpool.* Yes, stated but not exhibited.

*Glasgow.* Records of services are kept. If mains from which services branch should give out owing to age, in all probability the services would require renewing but there is no record so far of such necessity.

*St. Pancras.* Yes, of recent years; very good record kept, card system.

*Newcastle—Supply, Westminster.* Yes.

*Newcastle—District.* Service boxes are numbered, recorded and inspected once a year.

*London—City.* An inspection is made once a year.

*St. James.* Yes, a card system of service records.

H 90. Are there any regulations in force regarding the entrance of employees into houses?

*Manchester.* By permit signed by chief engineer or secretary.

*Liverpool.* No regulations.

*Glasgow.* Yes, but they always have orders with them to prove their identity if questioned.

*St. Pancras.* No.

*Newcastle—Supply.* No printed regulations; employees carry passes.

*Newcastle—District.* Each employee is provided with pass.

*London—City.* None submitted.

*Westminster.* Employees show badge or card.

*St. James.* No printed regulations.

H 91. Does any one inspect the work done by employees in consumers' houses?

*Manchester.* Yes. Foreman inspects and tests.

*Liverpool.* Yes, an official of the department.

*Glasgow.* Yes, setting of meters always inspected.

*St. Pancras.* Work in consumers' houses done by outside contractors is always inspected. Engineer says that department has power to make regulations as to character of work that should be done in consumers' houses, but it has no power to enforce these regulations.

*Newcastle—Supply.* All work is inspected by a competent installation inspector.

*Newcastle—District.* Yes, the mains superintendent or his assistant.

*London—City, Westminster, St. James.* Yes, by inspectors.

H 92. If so, did it include every job?

*Manchester.* General.

*Liverpool.* Every job, whether carried out by a servant of the department or by other contractor.

*Glasgow.* Particular inspection as a general rule.

*St. Pancras.* Yes, every job.

*London—City.* Practically every job.

*Other Companies.* Every job.

# FINANCIAL MATTERS

## British Electricity Supply Works

## (Schedule IV)

By R. C. JAMES and E. HARTLEY TURNER[1]

I 1. Data for year ending: Manchester, March 31, 1905; Liverpool, December 31, 1905; Glasgow, May 31, 1905; St. Pancras, March 31, 1906; Companies, December 31, 1905.

I 2. Give prices for current per Board of Trade unit (k. w. h.) for various purposes.

I 3. State what discounts were allowed and free service rendered.

I 4. Give meter rents, if any.

There are special rates or varying conditions in nearly every town, but the charges given on the following pages are the principal ones:

[1] All figures in these schedules relating to assets, liabilities, revenue, and profit and loss accounts, are prepared from the published accounts certified by the auditors. We have in all cases where further information was required obtained such details from the staff of the undertaking.

We have not in any case verified by personal examination the accuracy of the audited accounts, as we considered that in the short time at our disposal we should not have been able to do this with any completeness, even had we entrée to the books and original records.

| *Towns* | *Lighting.* | *Power and Heating.* | *Street Lighting.* (1) | *Discounts.* | *Ordinary Meter Rents.* | *Gratuitous Work.* | *Were Deposits Required?* |
|---|---|---|---|---|---|---|---|
| *Manchester:* | | | | | | | |
| Per annum..... | 4½d.; minimum 30s.; maximum demand £7 per k. w. and 1¾d. per unit. | Below 300 h. p. per quarter, 1¼d.; minimum 7s. 6d. per quarter. 300 h. p. or over, 1d. (2) Or a fixed charge of 25s. per quarter per e. h. p. demanded and 1s. 3d. per unit; tramways, 1.49d. | 2d. (3) | None. | None. | None. | Yes. |
| *Liverpool:* | | | | | | | |
| Per annum: | | | | | | | |
| First 3,000 units... | 3¾d. | 2d. | 2d. | None. | 1s. to 2s. per quarter. | None. | Yes. |
| Over 3,000 units... | 3d. | 1½d.; tramways 1.107d. | | | | | |
| *Glasgow:* | | | | | | | |
| Per annum: | | | | | | | |
| Maximum demand: | | | | | | | |
| First 365 hours.. | 6d. | First 1,277 hours 1½d. | £14—10 amp. lt. | None. | None. | None. | Very few. |
| Beyond ..... | 1d. | 3/4d. | £12—7½ amp. lt. per annum. | | | | |
| *St. Pancras:* | | | | | | | |
| Ordinary..... | 4d. | 1d. during the day and 6d. from 4.30 to 8.30 P. M. | 1½d. plus actual cost of carbons, trimming, etc. | None. | None, except where radiators were supplied at 1d. per unit. | None | Very few. |
| Maximum demand: | | | | | | | |
| First hour ..... | 6d. | | | | | | |
| Remainder each day ..... | 1½d. | | | | | | |
| | Indicator rent 1s. per quarter. | | | | | | |

| *Towns.* | *Lighting.* | *Power and Heating.* | *Street Lighting.* (1) | *Discounts.* | *Ordinary Meter Rents.* | *Gratuitous Work,* | *Were Deposits Required?* |
|---|---|---|---|---|---|---|---|
| *Newcastle—Supply*..... | 8¾d. (4) | Up to 1,000 units 1.5d.<br>Next 50,000 units 1.25d.<br>Next 50,000 units 1.0d.<br>Next 50,000 units .75d.<br>Special rates to large consumers. | See I 89 —43 | 5% if bills are paid before the 10th of the month. | 1/6 to 3/6 per quarter. | Note (5) | No. |
| *Newcastle—District*.... | 4½d.; with reductions to large users. | 2½d. and 1½d. with reductions to large users. | None. | 5% in first half of year and later a reduction of 1d. per unit, if acct. for the quarter is paid by the 10th of the 2d month | 15% of the cost. | Note (6) | No. |
| *London—City*..... | 8d.—3/4d. | 2½d.—3/4d. | £26 per year for each 500 watt arc lamp. | None. | 2/6d. & 5/0 per quarter. | None. | Yes. |
| *Westminster:* | | | | | | | |
| Per annum: | | | | | | | |
| First 1,000 units... | 5½d. | 2¾d. | £21 9s. per year for each 500 watt arc lamp. | None. | 3/6d. — 6/0 per quarter. | None. | Very few. |
| Next 3,000 units... | 4½d. | 2¼d. | | | | | |
| Over 4,000 units... | 3½d. | 1¾d. | | | | | |
| *St. James:* | | | | | | | |
| Per annum: | | | | | | | |
| First 4,000 units... | 6d. minimum; 10s. per quarter. | 3d. | £17 per year for each 10 amp. arc lamp. | 8% if bills are paid within 1 mo. | 2/6d.— 6/0 per quarter. | None. | No. |
| Over 4,000 units... | 4d. (7) | 2d. | | | | | |
| *Central*..... | Note (8) | 1¾d. | None. | ..... ..... | .. ..... | ... ... | . ... |

See notes on following page:

I 5. Were appliances supplied free to consumers?

No, except as above stated. In this connection, it should be noted that where fittings are furnished free or wiring done without charge, a higher price is often made for current, the additional amount being a return in part at least for this gratuitous work.

I 6. Did consumer pay for damages or repairs to meters and other appliances furnished by undertaking?

Each undertaking, whether company or municipal, made all ordinary repairs, except those due to wilful damage or fire.

I 7. Did consumer pay for connections with mains?

*Manchester.* Only where the service main (connecting house, etc., with distributor main) exceeded one yard in length, i. e., in cases of long gardens and long passages on private grounds.

*Liverpool.* Consumer paid cost of lines on private property and of service lines over 25 yards.

*Glasgow.* Consumer paid cost of lines upon private property, but the department always lays the service line up to the property line free of charge.

*St. Pancras.* Only long runs over private ground.

*Newcastle—Supply, District.* Only those over 60 feet.

*London—City.* Only where long mains had to be run with no intervening consumers and on private property over 12 feet.

*Westminster, St. James.* Only long runs over private ground.

*Central.* No service lines laid.

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Notes relating to table on pp. 340, 341.

[1] See answers to inquiries I 39-43, where the details of the charges are given. In most instances, these prices include care, maintenance and renewals.

[2] Hoists are charged separately from 1d. to 1⅞d. per unit.

[3] Street lighting by electricity is a negligible quantity. The amount received in 1905 was only £675.

[4] The charges by slot meters are 1d. for seven hours' use of one 8 c. p. (33 watt) lamp, except where wiring has been done free, then the rate is 1d. for five and one-half hours' use. There are no meter rents or discounts. Arc lamps are rented at 5s. per quarter.

[5] Lighting installations in private residences are provided on three-year hire purchase system, at a rental of 1/6 per lamp or per plug per quarter, or on the hire system, at 6d. per lamp per quarter.

[6] Consumers' houses are wired free and installation maintained, except lamp renewals, willful damage and damage by fire or water. Charges in such cases are 5½d. in Newcastle and 6d. in Benwell and Fenham.

[7] Basement lighting, if metered separately, is 3d. per unit, with a minimum charge of 5s. per quarter for all up to 4,000 units per annum; all over 4,000 units is 2d. per unit.

[8] Current is supplied to the Westminster and St. James companies in bulk. The price is fixed as nearly as possible at the actual cost of production, after paying interest on the debentures.

I 8. Was any part of the cost of mains paid by consumers or property owners?

No instance was found in any case.

I 9. Were extensions to new territory made free or charged for?

*Manchester, Liverpool, St. Pancras.* Extensions were made when demand justified outlay, free of charge to consumer.

*Glasgow.* Under the statutes 20 per cent. annually of the cost of laying a main may be required by the department in payment for current consumed. This was generally made a stipulation in laying mains in districts hitherto not supplied.

*Companies.* No charges were made.

I 10. Were these schedules and rules strictly enforced?

Yes, in every instance.

I 11. Were rates altered between January 1, 1900, and 1906?

*Manchester.* Price per unit:

| | *1900 to Oct., 1901.* | *Oct., 1901, to June, 1903.* | *June, 1903, to Jan., 1906.* |
|---|---|---|---|
| Lighting— | | | |
| Ordinary service..... | 5d. | 5½d. | 4½d. |
| Maximum demand..... | £7 & 1¾d. | £7 & 1¾d. | £7 & 1¾d. |
| Minimum charge..... | 30s. per an. | 30s. per an. | 30s. per an. |
| Power and heating— | | | |
| Less than 300 h. p..... | 3d. | 3d. | 1½d. |
| Over 300 h. p..... | 1¾d. | 1¾d. | 1d. |
| Minimum charge..... | 7/6 per qr. | 7/6 per qr. | 7/6 per qr. |

*Liverpool.* Price per unit:

| | *1900 to Mar. 1901.* | *April, 1901, to March, 1902.* | *April, 1902, to March, 1905.* | *March to December, 1905.* |
|---|---|---|---|---|
| Lighting per quarter— | | | | |
| Up to 3,000 units.... | 4d. | 4d. | 3¾d. | 3¾d. |
| Over 3,000 units..... | 4d. | 4d. | 3d. | 3d. |
| Power per quarter— | | | | |
| Up to 3,000 units.... | 2d. | 2d. | 2d. | 2d. |
| Over 3,000 units..... | 1d. | 1½d. | ½d. | 1d. |

*Glasgow.* Price per unit:

| | *1900-1901.* | *1902-1903.* | *1904.* | *1905.* |
|---|---|---|---|---|
| Maximum demand, 365 hours.... | 6d. | 6d. | 6d. | 6d. |
| Ditto, afterwards..... | 1½d. | 1d. | 1d. | 1d. |
| Power— | | | | |
| Maximum demand, 1,277 hours... | 1½d. | 1½d. | 1½d. | 1½d. |
| Ditto, afterwards..... | | | ¾d. | ¾d. |
| Minimum ..... | | | 1d. | None. |

*St. Pancras.* Price per unit:

| Lighting— | *1900-'1.* | *1901-'2.* *1902-'3.* | *1903-'4.* *1904-'5.* | *1905-'6.* |
|---|---|---|---|---|
| Maximum demand first two hours.. | 6d. | 6d. | 1st 1½ hrs., 6d. | 1st hr., 6d. |
| Thereafter ..... | 2d. | 3d. | 3d. | 1½d. |
| Flat rate..... | 5d. | 5d. | 4d. | 4d. |
| Indicator rental, per quarter..... | | | | 1s. |
| Power ..... | 2d. | 2d. | 2d. | 1d. |
| From 4:30 to 8:30, per unit..... | | | | 6d. |

In 1905-'6 factories were allowed current for lighting at power rates up to 20 per cent. of their power consumption.

*Newcastle—Supply.* Price per unit:

| Lighting— | *1900-1904.* | *1905.* |
|---|---|---|
| Flat rate..... | 4½d. | 3¾d. |
| Maximum demand after minimum | 1d. | None. |
| Power... ..... | 1½d. down. | 1½d. down. |

If bills were paid before the 10th of following month, a discount of 5 per cent. was allowed. The rates to power consumers varied with the conditions of supply.

*Newcastle—District.* Price per unit, with special rates to large consumers:

| | *1900-1902.* | *1903, to July, 1905.* | *July, 1905, to Dec., 1905.* |
|---|---|---|---|
| Lighting ..... | 6d. | 4½d. with 5% discount. | 4½d. and 1d. discount. |
| Power ..... | 2½d. | 2½ and less. | 1½ and less. |

*London—City.* Price per unit:

| | *1900-1901.* | *1902.* | *1903-1904.* | *1905.* |
|---|---|---|---|---|
| Lighting ..... | 8d. to 2d. | 8d. to 1d. | 8d. to 1d. | 8d. to ¾d. |
| Power ..... | 2½d. to 1d. | 2½d. to 1d. | 2½d. to 1d. | 2½d. to ¾d. |
| Heating ..... | 2½d. | 2½d. to 1½d. | 2d. to 1½d. | 1½d. |

The conditions for the different rates varied so greatly that only the limits are given here.

*Westminster.* Price per unit:

| Lighting, per annum— | *1900-1901.* | *1902-1903.* | *1904.* | *1905.** |
|---|---|---|---|---|
| Up to 4,000 units..... | 6d. | 6d. | 5½d. | |
| Over 4,000 units..... | 4d. | 4d. | 3½d. | |
| Power, per annum— | | | | |
| Up to 4,000 units..... | 3d. | 3d. | 2¾d. | |
| Over 4,000 units..... | 2d. | 2d. | 1¾d. | |

A discount of 8 per cent. was allowed to 200 volt consumers during 1900-1903. Change in pressure was made at company's expense.

*See inquiries I 2-4.

*St. James.* Price per unit:

| Lighting, per annum— | *1900-1901.* | *1902.* | *1903.* | *1904-1905.* |
|---|---|---|---|---|
| Up to 4,000 units..... | 6d. | 6d. | 6d. | 6d. |
| Over 4,000 units..... | 4d. | 4d. | 4d. | 4d. |
| Basement lighting— | | | | |
| Up to 4,000 units..... | 6d. | 6d. | 3d. | 3d. |
| Over 4,000 units..... | 4d. | 4d. | 2d. | 2d. |

| Power, per annum— | 1900-1901. | 1902. | 1903. | 1904-1905. |
|---|---|---|---|---|
| Up to 4,000 units..... | 3d. | 3d. | 3d. | 3d. |
| Over 4,000 units..... | 3d. | 2d. | 2d. | 2d. |
| | | | 8% discount. | 8% discount. |

*Central.* Price per unit: 1903, 3d.; 1904, 1¾d.; 1905, 1¾d.

I 12. Was the reduction voluntary, the result of law or ordinance or competition?

Voluntary in each instance, but due possibly to competition in part.

I 13. If plant has undergone a change from private to public management, give rates just before and after change.

*Manchester, Glasgow, St. Pancras.* Always municipal plants.

*Liverpool.* At date of transfer, the company was charging 7½d. per unit for lighting and 5d. for power. After the transfer the municipality charged 6d. and 4d. for lighting, and 3d. and 2d. for power.

I 14. Were bills considered as liens against property?

Only as bills against consumer in every instance.

I 15. How were bills collected?

*Manchester.* The gas department sent its collectors and charged the electricity department £886 for their service.

*Liverpool.* By collectors and payment at offices. The conditions of supply provide that all accounts shall be paid to the City Treasurer.

*Glasgow.* Accounts are payable at the Treasurer's office in the City Chambers or to collectors who call upon consumers.

*St. Pancras.* By collectors and payments at office.

*Newcastle—Supply.* By collectors and payment at office.

*Newcastle—District.* Consumers paid at the office. The company did not employ collectors except for slot meters.

*London—City.* By collectors.

*Westminster.* Greater proportion of bills were paid at office by check, but a few collectors were kept to push delinquents.

*St. James.* By collectors and payment at office. A large proportion were paid by checks sent by mail.

I 16. How often were collections made?

*Manchester, Liverpool, St. Pancras.* Quarterly.

*Glasgow.* Every two months.

*Newcastle—Supply, District, Westminster.* Quarterly.

*London—City.* Quarterly, monthly and weekly.

*St. James.* Quarterly and weekly.

I 17. What system of accounts was used during last fiscal year?

The standard form prescribed by the Board of Trade in every instance except the Newcastle Supply company. There are two forms prescribed; one for the accounts of local authorities, the other for the accounts of private companies. These forms are practically the same, the only point of difference being on the question of depreciation. The variation is that while the form for private companies includes depreciation on leasehold works, buildings, plant, machinery, etc., the form for local authorities does not provide for depreciation.

I 18. By whom were the accounts audited?

*Manchester.* Messrs. Butcher, Litton & Pownall, chartered accountants, Man., and the elective and mayor's auditors.

*Liverpool.* A continuous audit was conducted by the comptroller and auditor of accounts. There was also an audit by the elective and mayor's auditors. The city does not employ any outside professional auditors except for the tramway department.

*Glasgow.* Messrs. Kerr, Andersons MacLeod, C. A., Glasgow.

*St. Pancras.* Local Government Board Auditor.

*Companies.* By an auditor appointed by the Board of Trade, and also by a professional accountant appointed by the shareholders. The only exceptions are the Westminster Company, where the only auditor was the one appointed by the Board of Trade, and the City of London Company, where the Board of Trade auditor has no authority to audit the accounts for the city, but only for Southwark.

I 19. Who paid for this auditing?

*Manchester.* The municipality, out of city fund. No part of the fee of the professional auditors was charged to any department.

*Liverpool, Glasgow.* The electricity department.

*St. Pancras.* The borough, not the department.

*Companies.* The expenses of both audits were paid by the companies.

I 20. Who selected the auditor?

*Municipalities.* The city council in each case, except in St. Pancras, where he was chosen by the Local Government Board.

*Companies.* The Board of Trade selected the official auditor; the shareholders, the company's auditor.

I 21. Was each item charged to the proper account?

*Municipalities.* Yes, except the items noted under I 29.

*Companies.* Yes, as certified by the auditors.

I 22. What provision was there for assuring that each item was properly charged?

Besides the audit described under inquiry I 18—

*Manchester.* The certificate of the departmental managers and a checking of all charges by the accountant.

*Liverpool.* All bills were checked by the audit staff.

*Glasgow.* Every item was checked from the moment it was ordered until paid by the treasurer and certified by the auditor that it had been charged to the proper account.

*St. Pancras.* All bills were classified by the borough treasurer.

*Newcastle—Supply, District.* A proper record of all purchases was kept, and the classification was subject to the supervision and control of the higher officials.

*London—City.* There was a proper system of cost accounts. Charges were allocated by the engineer, and checked and audited by the accountants of the company.

*Westminster, St. James, Central.* Charges were allocated by the engineer and checked by the accountants.

I 23. Were the accounts of the particular plant kept separate from all others and from the general accounts of the City?

Yes, in each instance.

I 24. As regards taxes, fire insurance, boiler insurance, water, rents of lands and buildings not owned but used, interest on loan debt and other liabilities, were the expenses charged in the books of the undertaking and included in the financial returns?

The accounts of each plant were charged with amounts spent.

I 25. As regards accident insurance and payments for claims and damages, were the expenses charged in the books of the undertaking and included in the financial returns?

The accounts of each plant were charged with the amounts expended, but some took out the ordinary insurance policy while others carried their own insurance.

I 26. As to current used in plant and offices, was the cost charged in the books of the undertaking and included in the financial returns?

Records were kept except in Liverpool and St. Pancras, but no entry was made either upon the debit or credit side of the revenue account for any plant.

I 27. Were charges made for "depreciation" in the books of the undertaking and included in the financial returns?

In this connection, it is advisable to consider not only the ordinary charges for repairs and maintenance, but payments out

of revenue to sinking and reserve funds, and in aid of rates—taxes—as well as depreciation funds. The first will be considered under I 28, the others will be treated here.

**I. Payments to Depreciation Funds.**

*Manchester.* It has not been the practice to charge the revenue account with any sum for depreciation. The ordinary current repairs have been charged out of revenue, and during the year under review also £13,328, for special renewals, at the generating and distributing stations. In addition a renewals fund has been accumulated of £50,000, of which £25,000 were taken out of the profits for the year under review. This fund is not invested, but used as working capital.

*Liverpool.* There is no "depreciation fund," but a renewals fund has been provided out of revenue of £68,971, not invested. This is in addition to the ordinary repairs charged to revenue account. The fund has been from time to time debited with the actual cost of renewals; the amount in 1905 was £3,917.

*Glasgow.* During the year 1904-5 the revenue account was charged with £39,242 for depreciation and £2,599 for loss on plant sold, in addition to the ordinary repairs. The total amount standing to the credit of the fund at the end of the year was £140,700, represented by expenditures upon works. In previous years depreciation has been written off at varying rates on capital outlay, the practice having been to write off as much as possible subject to the profits. The rates were reduced when profits were low, and in the year 1901 no depreciation was written off at all. The officials of the department state that the total amount set aside out of revenue for depreciation is £235,861, the difference—£95,161—being accounted for by capital outlay which has been written off and does not appear in the assets.

*St. Pancras.* During the year ending March 31, 1906, the only amounts charged to revenue account for depreciation were in respect of stores and tools, but during previous years surplus profits have been applied in writing off depreciation on accumulators, meters, machinery, boilers and other works, in addition to the ordinary charges for repairs.

*Newcastle—Supply.* The credit to the depreciation fund is £156,000, which has been created out of premiums received on shares to the extent of £137,500 and out of surplus profits to the extent of £18,500, of which £12,500 were set aside last year. The company states that this fund is more than sufficient to meet any obsolete plant, which is estimated at £117,000, and that depreciation will be set aside when the works are complete and in full revenue bearing condition. The fund is not invested, but is represented by capital outlay on works. The charges for ordinary repairs have been made annually.

*Newcastle—District.* Upon December 31, 1905, the company had provided out of revenue the sum of £7,500 only. Since

1899 only £500 have been placed to the credit of this account. The fund is not invested, but forms part of the working capital. In this connection it is important to notice that in 1904 the company sold part of the land purchased by them and realized a profit of £3,045, which was credited to revenue account. This profit was applied in payment of dividend.

*London—City.* Under the Act of 1893 the company was required to set aside for depreciation at least 7½ per cent. on the capital outlay at the end of each year, from which might be deducted expenditures for maintenance, renewals and replacements. The City Corporation was empowered to examine the accounts to guarantee that the provision was complied with. In 1900, owing to the feeling that this company ought not to be subject to obligations which did not apply to the other private companies within the Metropolis, the act was repealed and from that date no statutory requirement has been in force, although amounts have been credited to a depreciation-reserve fund out of surplus profits, a full statement of which is given below.

*Westminster.* This company has accumulated a fund of £162,755 by charging against revenue in each year certain fixed percentages on capital outlay in addition to the ordinary charges for repairs.

| | |
|---|---|
| At the end of 1899, this fund amounted to..... | £60,280 |
| And during the six years 1900-1905 it has been increased out of revenue by..... | 149,602 |
| | £209,882 |
| Out of this amount the company has expended for replacements ..... | 47,127 |
| Leaving unexpended, as above..... | £162,755 |

As to investment, see under II. below.

*St. James.* The company has regularly charged revenue with depreciation at fixed rates per cent., which amounts are deducted from the capital outlay shown in the balance sheet. The rate upon buildings has been 1 per cent. and upon plant, machinery, etc., 6 per cent. In the year 1905 £14,794 were thus deducted in addition to the usual charges for repairs.

*Central.* The depreciation fund stands at £6,300, charged out of surplus profits, besides payments for ordinary repairs. It is part of working capital.

### II. Payments to Reserve Funds.

*Manchester.* A reserve fund has been accumulated out of revenue amounting to £20,387, invested in government securities. The resulting interest is added to the fund. This fund has been drawn upon from time to time, and during the year under review was debited with the sum of £15,312, being the costs and expenses in connection with an action against the department on the grounds of vibration and explosion.

*Liverpool.* A reserve fund of £95,617 has been set aside out of surplus revenue, of which £26,471 have been invested in government securities.

*Glasgow.* This municipality has provided a reserve fund of £12,723 out of surplus profits for the year 1904-5. This fund is not specifically invested, but is represented by outlay on works and working capital.

*St. Pancras.* The reserve fund has been made up of:

| | | |
|---|---|---|
| Transfers from net revenue | | £56,719 |
| Interest on investments | | 2,481 |
| | | £59,200 |
| This amount has been applied as follows: | | |
| Alterations on change of pressure to 200 volts | £2,917 | |
| Depreciation of accumulators | 1,808 | |
| Compensations on purchase of property under compulsory powers | 8,137 | |
| Replacement of plant | 7,931 | |
| Cost in opposing electrical bills in Parliament, 1906 | 2,480 | |
| Promotion of new bill for additional powers, 1906 | 296 | 23,569 |
| | | £35,631 |

*Newcastle—Supply.* The depreciation and reserve funds are:

| | |
|---|---|
| Depreciation account | £156,000 |
| Reserve account | 12,184 |
| | £168,184 |

These funds have been provided as follows:

| | |
|---|---|
| Premiums received on shares | £155,676 |
| Transfers from profit and loss to reserve account | 6,547 |
| Transfers from profit and loss to depreciation | 18,500 |
| Total | £180,723 |

Applied in part as follows:

| | | |
|---|---|---|
| In writing off formation expenses as required by the Board of Trade auditor | £3,004 | |
| Stamp duty on increase of capital | 2,282 | |
| Cost of issue of new shares | 3,753 | |
| Cost of change of voltage | 3,500 | 12,539 |
| Leaving the above balance of | | £168,184 |

Although the company holds investments in several companies which have cost £115,125, they are more in the nature of an extension of the business rather than a specific investment of the reserve fund which is practically uninvested, except in capital outlay on the works.

The company also has a suspense account credit amounting to £29,765. This account originated in an amount of £50,000 received from the County of Durham Distribution Company under the working agreement of March, 1905, to meet the reduction in the company's revenue, arising on cancellation of the old contract and other contingent expenses. Out of this sum the directors have taken £20,235, being the reduction in revenue for the year 1905 arising out of the cancellation of the old contract, also the premium paid on the purchase of the Durham company's shares, and the costs and expenses incurred in carrying into effect the new working agreement. This leaves a balance to the suspense account of £29,765.

*Newcastle—District.* The company has accumulated a reserve fund of £14,500, made up as follows:

| | | |
|---|---|---|
| Premiums received on shares | | £20,218 |
| Transfers from revenue account | | 1,282 |
| Total | | £21,500 |
| This fund has been charged with the following items: | | |
| Registration expenses of new capital | £513 | |
| Costs of rating appeal | 353 | |
| Cost of debenture issue | 2,758 | |
| Preliminary working charges on the Newburn Works | 766 | |
| Interest on capital outlay | 2,610 | 7,000 |
| Leaving the above balance of | | £14,500 |

This fund is not specifically invested, but forms part of the working capital.

| | |
|---|---|
| *London—City.* On December 31, 1895, the balance to the credit of the depreciation and reserve funds, which were set aside in accordance with the Act of 1893, amounted to | £39,248 |
| Which amount was increased in ten years by— | |
| Transfers from net revenue account | 318,526 |
| Premiums on shares and debentures | 71,577 |
| Sales of old plant | 5,954 |
| Total | £435,305 |

This amount has been applied as follows:

| | |
|---|---|
| Ordinary repairs and maintenance[1] | £108,513 |
| Special expenditures on replacements | 16,210 |
| Loss on sale of investments | 2,674 |

[1] These repairs were for the years 1896 to 1901 and are repairs which in subsequent years have been charged to the ordinary revenue account. The revenue accounts for the years 1896-1901 do not, therefore, contain the ordinary repairs and maintenance as part of the working charges.

| | |
|---|---|
| Cost of alterations of meters, fittings and apparatus on consumers' premises in connection with change of pressure | 22,336 |
| Assets written off on demolition and deducted from capital expenditure, less estimated value taken into store, analyzed below | 89,251 |
| Total | £238,984 |
| Balance in reserve fund, with which the depreciation fund had been consolidated, Dec. 31, 1905 | 194,321 |
| Balance in leasehold redemption fund, Dec. 31, 1905 | 2,000 |
| | £435,305 |

There is also a bad debt reserve fund amounting to £1,400, which has been added to the above amounts to give the total reserve of £197,721 under K 5.

Upon December 31, 1904, the funds were as follows, the reserve and depreciation funds provided for under the Act of 1893 having been merged:

| | |
|---|---|
| Reserve and depreciation funds | £255,258 |
| Leasehold redemption fund | 1,500 |
| | £256,758 |
| During the year they were increased by the estimated value of old plant, stores, etc., resulting from dismantled works in 1905, less the cost of dismantling | 1,130 |
| And by transfers from the revenue account for 1905 for leasehold redemption | 500 |
| And for general reserve purposes | 45,000 |
| Total | £303,388 |

Out of this fund there were taken in 1905:

| | |
|---|---|
| Cost of alteration of meters, fittings and apparatus on consumers' premises in connection with change of pressure | £904 |
| Cost of works dismantled to December 31, 1905, deducted from capital expenditure | 89,058 |
| General stores adjustment account. The general stores have been revalued especially as regard old items taken out of service and returned to stores and there has been written off | 10,040 |
| Special expenditure on machinery of plant, cables and other works replaced during 1905, less value of old stores | 7,065 |
| Total | £107,067 |
| Leaving a balance to credit of reserve account of | 194,321 |
| Leasehold redemption | 2,000 |
| Total | £303,388 |

The item for plant dismantled and written off is made up of:

| | |
|---|---|
| Machinery, plant, etc. | £28,036 |
| Mains | 25,190 |
| Wiring motors and fittings on hire | 321 |
| Transformers and accessories | 10,701 |
| Tools and plant | 304 |
| Buildings | 6,885 |
| Cost of Southwark Order | 495 |
| Expenditures on conduits for telephone purposes | 17,126 |
| | £89,058 |

In addition to the above a transfer has been made to the debenture stock redemption account. This latter fund is in respect of the first debenture stock of the company of which they have issued £400,000. This stock is redeemable at 125 per cent., which represents a premium of £100,000. There is no fixed date for the redemption of the debenture stock, but it is redeemable at the option of the company at six months' notice after 1910. We consider that this provision is ample.

| | |
|---|---|
| On December 31, 1895, the balance of premiums on issue of £400,000 debenture stock standing to the credit of this account amounted to | £65,280 |
| Which has been increased during the ten years by the following items: | |
| Premiums on ordinary shares | 80,000 |
| Interest on debenture premium account | 575 |
| Total | £145,855 |
| Of which there has been applied as follows: | |
| Expenses of issue of shares | £852 |
| Costs re applications by other companies | 3,646 |
| Replacements | 7,908 |
| Expenditure on Wool Quay, before abandoned as a generating station | 14,510 |
| Transfer to depreciation and reserve fund | 71,577 |
| | £98,493 |

On December 31, 1900, this account was closed and the balance of premiums unapplied, viz., £47,362, was treated as a reserve to provide for the redemption of the first debenture stock at 125 per cent. It has since been increased by interest charged to the revenue account and added to the fund, amounting to £5,970, making a total of £53,331.

Of the total amount in the various funds of £251,052, £59,303 were invested, the remainder being represented in outlay on works.

*Westminster.* The amount standing to the credit of the reserve fund at December 31, 1900, was ..... £9,779

| | |
|---|---|
| Which has been increased by: | |
| Interest received on investments | 2,218 |
| Premium on new shares | 18,653 |
| | £30,650 |
| From this there have been taken for the expenses of the issue of new shares in 1905 | 4,046 |
| Leaving a balance at December 31, 1905 | £26,604 |

The company has cancelled founders' shares of the nominal value of £500, which sum has been added to the above amount under K 5.

| | |
|---|---|
| The balance to the credit of the "sinking fund" on December 31, 1900, was | £12,172 |
| Which has been increased by interest received during the 6 years ending December 31, 1905, amounting to | 3,787 |
| And transfers from revenue account | 17,000 |
| Total | £32,959 |

being the balance on December 31, 1905.

This "sinking fund" would more correctly be described as a leasehold redemption fund, and has been provided for the following purposes. A large proportion of the property owned by the company is held upon short leases as is customary in London and being situated in the West End the ground landlord has always insisted upon buildings of such a character that they would not spoil the surrounding property. Consequently they have been expensive and this fund has been set aside voluntarily out of profits to provide for the buildings reverting to the ground landlord at the end of the leases. This fund is invested specifically and has been increased by the resulting interest received.

With regard to the investment of the funds of this company—£222,818—part of the investment (£126,928) consists of shares and debentures of the Central Electric Company from which the Westminster company purchases current. The investment in the Central company is not readily realizable and it cannot properly be considered as an investment of the funds. Part of the funds are invested in working capital.

*St. James.* The reserve fund has been built up as follows:

| | | |
|---|---|---|
| Premium on shares— | | |
| 1891, 10,000 preference shares at 30s | £15,000 | |
| 1899, 8,020 ordinary shares at £7 10s | 60,150 | |
| 1899, additional premium on 678 ordinary shares, less expenses | 894 | |
| | | £76,044 |
| Founders' shares capital cancelled in 1899 | | 100 |
| Profit on sale of reserve fund investment | | 952 |
| Transfer from revenue account, being part of surplus profits in 1902 | | 5,792 |
| Total | | £82,888 |

| | | |
|---|---|---|
| Out of this amount there have been taken: | | |
| Premium on redemption of debenture stock in 1899, which stock was replaced by the 3½ per cent. stock issued in 1900..... | £2,500 | |
| Discount on issue of 3½ per cent. debenture stock at 96 in June, 1900..... | 6,000 | |
| Expenses of issue of debenture stock..... | 2,067 | |
| Central Electric Supply Co., Ltd., one-half of interest and part of the management expenses during period of construction, £8,352; less interest received from that company in 1901, £2,560..... | 5,792 | 16,359 |
| Net ..... | | £66,529 |

The amount standing to the credit of the capital reserve fund has remained at this figure since December 31, 1902.

The company has also provided a contingency fund of £2,500, the object of which is to provide for the high cost which had to be paid to the Central company for current supplied during the initial stages of that company.

Of the above funds £27,134 are invested in outside securities, and the company has invested £54,213 in the Central company, viz., £50,000 of ordinary stock and £4,213 of debentures. The dividends on the above investments have been credited to the net revenue account.

*Central.* The reserve fund created out of premiums on debentures amounts to £4,668, which is not invested.

Under the trust deed provision has to be made for the redemption of the loan debt, and the company has set aside out of revenue the sum of £18,156 up to December 31, 1905. Of this amount £11,456 are specifically invested.

### III. Payments in Aid of Rates—Taxes.

The amount paid over in aid of rates is as much an application of surplus profits as the provision of a reserve fund. The reserve fund appears in the accounts of the undertaking, but profit applied in aid of rate is not generally shown in the accounts and then only as a memorandum. The following table summarizes the facts:

PROFIT PAID IN AID OF RATES.

| *Towns.* | *Total Amount.* | *Years.* | *Annual Average.* | *Year Under Review.* | *How Applied.* |
|---|---|---|---|---|---|
| Manchester ..... | £52,964 | 12 | £4,414 | ..... | Note [1] |
| Liverpool ..... | 66,585 | 9 | 7,398 | 19,740 | Note [2] |
| Glasgow ..... | ..... | .. | ..... | ..... | Note [1] |
| St. Pancras ..... | 18,220 | 14 | 1,301 | 5,000 | Note [4] |

[1] This department does not contribute any part of its profits in aid of the general rate, nor does it make any contribution to the "Common Good."

[2] No contributions were made prior to 1901, and the total amount was paid over in five years.

[3] In 1894 and 1895 no profits were applied in aid of rate. They were so applied in the six following years, ending March 25, 1901. Since that date no part of the profits has been applied in aid of rate, and hence the total paid over was contributed in six years.

[4] The profit applied *in aid of* rate, viz.: £18,820, was contributed in the *years 1896, 1900, 1903, 1905* and 1906.

I 28. Were payments to sinking funds charged in the books of the undertaking and included in the financial returns?

Mr. Turner has had considerable experience in connection with municipal sinking funds, and we can assure the Commission that the figures as given in the published accounts are absolutely reliable apart altogether from the question of the audit of the accounts. Also it is quite impossible for any municipality to employ any part of its sinking fund in providing working capital or in any manner other than its legitimate purpose, namely, the repayment of loan debt. Any part of the sinking fund not so applied must be represented either by cash in the bank or invested in outside securities or, where permitted by statute, invested in the authorized loans of the same municipality, as at Liverpool—the only municipality of the ones here treated which has any amount in its sinking fund unapplied. It should be borne in mind, however, that the sinking fund may not be invested in any other department of the same municipality unless that department has obtained statutory powers to borrow the amount and is therefore under a statutory obligation to set aside out of revenue a sinking fund for its redemption.

*Municipalities.* The statutory provisions outlined under D 25 have been obeyed in each instance. See I 33 also.

*St. Pancras.* As the department is repaying the money it has borrowed by equal annual instalments with interest upon the balance unpaid and by equal annual instalments of principal and interest, there has been no accumulating sinking fund; it is not necessary.

*Companies.* No sinking fund obligations exist except as above described under I 27.

I 29. Were there any charges which should properly be included in expenses, but which were actually paid from other sources and not charged to the plant, such as the services of the town clerk, city treasurer, etc.?

*Manchester.* No charges were made for the services of the city treasurer, city architect, city surveyor, town clerk or auditors. It is estimated that £1,500 would cover the value of their services.

*Liverpool.* No; £2,000 per annum are included in management expenses to cover these items.

*Glasgow.* No.

*St. Pancras.* Cost of auditing and part of salaries of city officials and clerks. The amount is estimated at £1,000.

*Companies.* No.

I 30. Were there any items which should be credited to the income account, which were not so credited, such as current furnished free to any public department, employee or other person?

*Municipalities.* No.

*Newcastle—Supply.* No, but officials pay 1d. per unit net. The value of this free service was small.

*Newcastle—District.* Current was supplied free to two foremen. No account was taken of it, and it was included in leakage.

*Other Companies.* None.

I 31. Was there a storeroom account to which materials were charged when purchased?

Yes, in each instance. Regular store accounts were kept, and entries made under the proper accounts when material was received and issued, although the nature of the system varied from plant to plant in certain details.

I 32. How did the rate of interest on loan capital paid by the city compare with that paid by private public service companies?

| *Towns.* | *Rate paid by City.* | *Rate Paid by Companies.* | *City Lower than Company.* |
|---|---|---|---|
| Manchester | 3⅜ p. c. | 4 p. c. | ⅝ p. c. |
| Liverpool | about 3 p. c. | 4 p. c. | ½ to 1 p. c. |
| Glasgow | about 3 p. c. | 4 to 4½ p. c. | 1 to 1½ p. c. |
| St. Pancras | 2½ to 3¾ p. c. | 4 p. c. | ¼ to 1 p. c. |
| Newcastle-Supply | 3 to 3½ p. c. | 4 p. c. | ½ to 1 p. c. |
| Newcastle-District | 3 to 3½ p. c. | 4½ p. c. | 1 to 1½ p. c. |
| London-City | about 3 p. c. | 4½ to 5 p. c. | about 1½ p. c. |
| Westminster | about 3 p. c. | 4 p. c. | about 1 p. c. |
| St. James | about 3 p. c. | 4 p. c. | about 1 p. c. |
| Central | about 3 p. c. | 4 p. c. | about 1 p. c. |

I 33. What is the amount of the bonds or other liabilities of the plant cancelled since it began operation?

| *Towns.* | *Liabilities Redeemed.* | *Sinking Fund Unapplied.* | *Total.* |
|---|---|---|---|
| Manchester | £234,225 | ..... | £234,225 |
| Liverpool | 113,209 | £129,090 | 242,299 |
| Glasgow | 83,668 | ..... | 83,668 |
| St. Pancras | 54,803 | ..... | 54,803 |
| Newcastle-Supply | ..... | ..... | ..... |
| Newcastle-District | ..... | ..... | ..... |
| London-City | ..... | ..... | ..... |
| Westminster[1] | ..... | ..... | ..... |
| St. James | ..... | ..... | ..... |
| Central | ..... | 18,156 | 18,156 |

I 34. In construction work, has a detailed record been kept of expenditures, so that the amount spent to date is known?

Yes, in every instance.

I 35. Have records been kept so that it is known that the total cost will exceed the appropriation before the indebtedness for the excess is incurred?

Yes, in every instance.

[1] See inquiry I 27 above, where explanation is given of a so-called sinking fund.

I 36. Give kind, cost and amount of coal used for boiler fuel.

| *Towns.* | *Kind.* | *Price.* | *Tons.* |
|---|---|---|---|
| Manchester | Bituminous, slack | 9/4.11 | 78,166 |
| Liverpool | Lancashire, slack | 6/10.5 | 85,502 |
| Glasgow | Glasgow, washed peas | 6/8.6 | 47,735 |
| St. Pancras | Watnall and slack | 12/8.3 | 20,500 |
| Newcastle-Supply | Steam coal | 5/4 | 58,423 |
| Newcastle-District | Small coal | 8/3 | 16,000 |
| London-City | Various | (?) | (?) |
| Westminster | Best Welsh smokeless | 20/9 | 25,647 |
| St. James | South Wales | 18/1 | 16,462 |
| Central | (?) | (?) | (?) |

I 37. Give kind, cost and amount of other fuel used.

None, except in the following cases:

*Liverpool.* Steam was obtained from refuse destructor plants.

*Newcastle—Supply.* Steam was made by the use of the surplus heat and gas from the coke ovens of the Priestman Power Co., with which the supply company has a contract. The company did not wish to impart information upon this point.

*St. James.* Briquettes stored for use in emergency.

I 38. Give quantity and cost of water used.

| *Towns.* | *Amount (gallons).* | *Total Cost.* | *Cost per 1,000.* |
|---|---|---|---|
| Manchester | 132,751,700 | £2,541 | 4.6d. |
| Liverpool | 125,840,000 | 3,213 | 6.1d. |
| Glasgow | (?) | (?) | (?) |
| St. Pancras | 20,176,000 | 595 | 7.1d. |
| Newcastle-Supply | 23,442,535 | 586 | 6.0d. |
| Newcastle-District | (?) | 769 | (?) |
| London-City | (?) | 408 | (?) |
| Westminster | (?) | (?) | (?) |
| St. James | (?) | Owns well. | (?) |
| Central | (?) | (?) | (?) |

I 39. What were the provisions of the contract between the company and city for public lighting? (See inquiry I 2.)

*Municipalities.* Inquiry not applicable.

*Newcastle—Supply.* The majority of the street lamps were lighted by the gas company, particulars of which are given in its schedule. Newcastle obtained current for 200 street lamps from the municipal tramway plant at a cost per annum to March 31, 1905, of £3,009. This company supplied no street lighting in Newcastle, but did in Walker under an agreement with the local authority, made March 27, 1903, to run 42 years from July 14, 1900. The company supplied the current, repaired and maintained the lamps, lighted and extinguished the lamps at certain specified times, provided the carbons. It charged the local authority a flat rate per lamp per year, but did not wish to disclose the rate charged.

*Newcastle—District.* No current supplied for street lighting.

*London—City.* See discussion under inquiries A 5-8.

*Westminster.* Contract runs until 1931 for lighting the streets of the parish of St. George, Hanover Square. Lamps, posts and mains are to be provided and fixed by the municipality. Expenses of maintenance, trimming, carboning, painting, lighting and turning off current are to be borne by the company. The rates begin at £22 per lamp, 500 watts, per annum and are to be reduced by one-half of 1 per cent. each year (i. e., tenth year £22, less 5 per cent.).

*St. James.* Contract runs for five years from October 12, 1905.

*Central.* No public lighting.

I 40. Public arc lighting.

| *Towns.* | *Number of Lamps.* | *Kind.* | *Number of Hours Lighted.* |
|---|---|---|---|
| Manchester | ——So small as to be negligible—— | | |
| Liverpool[1] | 193 | Equiv. to 1,502—16 c. p. | 2,105 |
| Glasgow | (?) | (?) | 3,900 |
| St. Pancras | 792 | (?) | 3,805 |
| Newcastle-Supply | (?) | (?) | (?) |
| Newcastle-District | ... | ... | .... |
| London-City | 506 | 500 watt | 4,300 |
| Westminster | 956 | 500 watt | 4,000 |
| St. James | 66 | 10 ampere | 3,940 |

I 41. Who owned the lamp posts?

I 42. Give price for street lighting.

I 43. Did the prices given here and under I 2 include care, maintenance and renewals?

| *Towns.* | *I* 41. | *I* 42. | *I* 43. |
|---|---|---|---|
| Manchester | No street lighting by electricity to speak of. | | |
| Liverpool | City. | 2d. per unit. | No. |
| Glasgow | City. | £12 to £14 per year. | Yes. |
| St. Pancras | City. | 1½d. per unit. | No. |
| Newcastle-Supply | City. | See I 39. | Yes. |
| Newcastle-District | .... | ..... | ... |
| London-City | Company. | £26 per year. | Yes. |
| Westminster | City. | £22 per year. | Yes. |
| St. James | City. | £17 per year. | Yes. |
| Central | .... | ..... | ... |

*Municipalities.* Street lighting was under the jurisdiction in each case of a separate committee which owned the lamp posts, paid the electrical department for the current furnished and had charge of the care and maintenance of the lamps except Liverpool and St. Pancras, where the lighting department paid the actual cost of care and maintenance to the electricity department, which in these two cases performed this work.

*Companies.* All those who did street lighting maintained and cared for the lamps, without further charge to the city.

[1] Each arc lamp post has two 16 c. p. lamps, which were turned on after midnight, when the arc lamps were switched off, and burned 1,700 hours per annum.

I 44. Were a budget of the estimated receipts and expenditures and an appropriation made up annually?

*Municipalities.* The several committees of the council prepare each year an estimate of the money which they anticipate will be received and required during the forthcoming year. Where the department contributes towards the general rate of the city, the estimated contribution is deducted in arriving at the tax rate to be levied. The control of the actual expenditure is entirely in the hands of the committee having charge of the undertaking, and they are not debarred from exceeding the estimate.

*Companies.* The expenditure is solely in the hands of the directors to act as they think fit.

### J—Share and Loan Capital.

J 1. Share capital.

***Municipalities*** have no share capital.

| *Amounts.* | *Newcastle-Supply.* | *Newcastle-District.* | *London-City.* |
|---|---|---|---|
| Authorized | £750,000 | £300,000 | £1,200,000 |
| Called up | 750,000 | 230,000 | 1,105,950 |
| Uncalled | ..... | 70,000 | 94,050 |
| Unissued | ..... | ..... | ..... |
| Calls in arrears | ..... | 1,250 | ..... |
| Calls paid in advance | ..... | 6,101 | ..... |
| Fully paid | 750,000 | 234,851 | 1,105,950 |
| No. of shareholders | (?) | 989 | 3,378 |

| *Amounts.* | *Westminster.* | *St. James.* | *Central.* |
|---|---|---|---|
| Authorized | £2,000,000 | £300,000 | £100,000 |
| Called up | 740,755 | 300,000 | 100,000 |
| Uncalled | 200,000 | ..... | ..... |
| Unissued | 1,059,245 | ..... | ..... |
| Calls in arrears | ..... | ..... | ..... |
| Calls paid in advance | 10,245 | ..... | ..... |
| Fully paid | 751,000 | 300,000 | 100,000 |
| No. of shareholders | (?) | (?) | (?) |

J 2. Explain how share capital was issued.

*Newcastle—Supply.* The share capital was composed of 150,000 £5 shares, of which 75,000 were preference and 75,000 ordinary shares. The former are entitled to a dividend of 5 per cent. in priority to the ordinary shares which are then entitled to 8 per cent. If any profits remain, they are to be divided equally between the preference and the ordinary shares.

Prior to 1898 the whole of the capital consisted of ordinary shares and was issued to stockholders at par. Since then the company has received £155,676 in premiums, of which £137,500 have been transferred to the depreciation fund and £18,176 to the reserve fund.

| | *Preference.* | *Ordinary.* |
|---|---|---|
| The shares offered at a premium number.. | 67,991 | 58,071 |
| The shares allotted at par numbered..... | ..... | 9,370 |
| In 1903 shares were allotted to the Walker & Wallsend Gas Company, at par.... | 7,009 | 7,009 |
| | 75,000 | 74,450 |
| Leaving 550 shares which have been allotted to employees at par..... | ..... | 550 |
| | 75,000 | 75,000 |

These 550 shares have been allotted as part of the bonus remuneration of the employees in order to give them an interest in the company. The employees do not pay anything for the shares, but the dividends declared are credited against the amounts due therein, and interest is not charged upon any unpaid balances.

*Newcastle—District.* Of the original capital of £50,000, £20,000 were offered for public subscription. The company has received as premium on stock issued the sum of £21,500, which has been placed to the credit of the reserve fund and used in writing off the expenses attending the issue of new capital and mortgage debentures, and also in defraying the loss on the preliminary working of the Newburn works.

*London—City.* The authorized capital is made up of 80,000 ordinary and 40,000 preference £10 shares. The capital called up consists of 70,595 ordinary and 40,000 preference shares. The latter are entitled to a preferential dividend of 6 per cent., but are not entitled to any preference as to capital on the winding up of the company. In all cases the stock has been offered to the general public and shareholders either at par or at a premium.

*Westminster.* The original share capital, both ordinary and preference, was issued at par by prospectus. Subsequent issues have been to the shareholders *pro rata.* The first issue of 28,151 £5 preference shares was entitled to a dividend of 5 per cent.; the second issue of 50,000 £1 preference shares, to a dividend of 4½ per cent. Subsequently the 5 per cent. preference shares were converted into 4½ per cent. The above 50,000 preference shares were all taken up by the shareholders at a premium of 7s. 6d per share, or £18,653, which has been added to the reserve fund.

*St. James.* The authorized capital of £300,000 now consists of 40,000 ordinary and 20,000 preference shares of £5 each. Prior to 1899 the authorized capital was £300,100, but in that year the capital of the company was reduced, with the approval of the court, and the founders' shares amounting to £100 were cancelled. The founders' shares carried the right to one-half of the profits after paying 7 per cent. to the ordinary shareholders. Differences arose as to ascertaining the profits, and to remove these differences 12,000 ordinary shares were issued in 1898 to the holders of the founders' shares in the proportion of 120 new ordinary shares for each

founders' share of £1. The ordinary shares of the company were at that time selling at a premium of about £8 per share, and seeing that the ordinary shares were issued to the holders of the founders' shares at par, this premium of £8 represents the price paid to the founders for relinquishing their rights. This premium does not, of course, appear in the accounts. The original issue of capital was by prospectus, upon which the stock was taken up by the public. The original shares were issued at par, and subsequent issues were made at a premium.

*Central.* The share capital of £100,000 is held in equal amounts by the Westminster and St. James companies. It has all been issued and paid up in cash at par. There has been no public issue of capital.

J 3. Loan capital. (Debenture stock or mortgages are analagous to bonds in the United States.)

| *Towns.* | *Authorized.* £ | *Issued.* £ | *Paid Off.* £ | *Outstanding.* £ |
|---|---|---|---|---|
| Manchester ..... | 2,359,546 | 2,216,931 | [1]238,696 | 1,978,235 |
| Liverpool ..... | (?) | 1,519,202 | 113,209 | 1,405,993 |
| Glasgow ..... | 1,400,000 | 1,290,000 | 83,668 | 1,206,332 |
| St. Pancras..... | 478,457 | 478,457 | 54,803 | 423,654 |
| Newcastle-Supply ..... | 250,000 | 250,000 | ..... | 250,000 |
| Newcastle-District .... | 150,000 | 150,000 | ..... | 150,000 |
| London-City ..... | 800,000 | 700,000 | ..... | 700,000 |
| Westminster ..... | 250,000 | 250,000 | ..... | 250,000 |
| St. James..... | 150,000 | 150,000 | ..... | 150,000 |
| Central ..... | 500,000 | 336,876 | ..... | 336,876 |

J 4. Explain how loan capital was issued.

*Manchester.* The money was raised under mortgage in sums of not less than £100, repayable in 3, 5, 7 and 10 years. The Local Government Board has allowed about 26 years upon an average within which to repay debts, and the money has been borrowed on shorter terms and renewed from time to time.

*Liverpool.* Part of the stock was issued at a discount, and this and the costs of issuing the stock amounting to £41,981 were included in the capital outlay. The stock was issued by public advertisement, and in addition a commission was paid to agents for procuring loans.

*Glasgow.* By public subscription.

*St. Pancras.* By loans from the London County Council and the Prudential Assurance Company.

*Newcastle—Supply.* Public subscription for 4 per cent. mortgage debentures at par. These debentures constitute a first floating charge on the whole of the company's property, present and future, including its uncalled capital, redeemable at the option of the company at any time after three years at six months' notice at 105 per cent.

[1] This amount is greater by £4,471 than the amounts given under inquiry I 33, the explanation being that loans amounting to £4,470 have been repaid out of bank overdraft and not by sinking fund.

*Newcastle—District.* The mortgage debenture stock was offered for public subscription by a prospectus dated June 5, 1905. The stock bears interest at the rate of 4 per cent. and is redeemable at 105 per cent. at any time after July 1, 1910, upon the company giving six months' previous notice. Under the trust deed, whereby the assets of the company are charged with the repayment of the principal and interest due to the holders of the mortgage debenture stock, the amount which the company may raise is limited to one-half of the capital subscribed for the time being. "Subscribed capital" includes the total amount which the shareholders agree to contribute in respect of shares allotted to them, and the borrowing powers are not affected by the fact that only part of the subscribed capital has actually been paid in cash. The debenture stock is secured by a mortgage of the company's freehold and leasehold properties, and is a floating charge upon the remainder of the company's property and assets, but not upon the uncalled capital.

*London—City.* In all cases offered to the general public and to shareholders either at par or at a premium. The company has issued £400,000 first debenture stock 5 per cent., redeemable at 125 on six months' notice after 1910. This stock is a general charge over the whole of the assets and is secured by a trust deed which limits the amount to be borrowed to £500,000, including the premium. The whole has been raised. The second debenture stock 4½ per cent. has been raised under a similar trust deed. It ranks after the first debenture stock and is redeemable at par.

*Westminster.* The original capital was offered for public subscription. In 1900, the old 5 and 4½ per cent. debentures were redeemed and 3½ per cent. debentures issued. The cost of this redemption and of the issue of new stock was charged to the revenue account. The mortgage debentures are a floating charge upon the whole of the assets of the company. There is no trust deed charging the property.

*St. James.* By public subscription. The present issue was made as a discount of 4 per cent., which discount—£6,000—was charged against the capital reserve fund and does not appear on the assets side of the balance sheet. The directors may borrow up to one-half of the nominal capital of the company, unless by sanction of the company in general meeting. The full authorized amount has been raised by the issue of 3½ mortgage debenture stock and secured by a trust deed as a first charge upon the whole of the company's assets.

*Central.* The first issue of debenture stock of £250,000 was made by prospectus dated July 5, 1901. It is redeemable by the company at par on December 31, 1931, or at any time at 110 upon six months' notice. It is secured by a trust deed forming a first charge upon the undertaking of the company, and by the joint and several guarantee of the St. James and Westminster companies both as to principal and interest. A further issue was made in December, 1904, of £50,000 debenture stock to rank *pari passu*, with the

foregoing issue redeemable in the same manner. This latter stock was issued at a premium of 5 per cent.

J 5. If funds have been secured from any other sources for the construction and extension of plant, give amounts, dates and sources fully. (See also inquiry J 6.)

In no case is this separately shown in the balance sheet, but where it is not so shown it is quite possible that extensions have been made out of revenue and charged to ordinary maintenance without being separately distinguished. In this connection it is important to bear in mind that while some municipalities have not charged their revenue with outlay of this character, yet they are repaying by means of sinking fund which is charged to revenue, the whole of the capital which has been borrowed with the sanction of central government for the purpose of making the outlay.

See also data under J 8 and K 6.

J 6. How has working capital been secured?

Working capital is provided in the case of private undertakings ofttimes by the use of capital stock or loans. The memorandum and articles of association of private undertakings give power to the directors to raise capital in this way. In some cases, however, working capital has been provided by bank overdrafts, which practically mean loans from the bank; and in other cases by the use of reserve and other funds. In municipalities the conditions are different, as a municipality has to obtain a special act to carry out certain definite work, and Parliament authorizes the borrowing of money for specific purposes, and this does not include any provision for working capital. The Local Government Board does not approve of municipalities borrowing money from banks. Consequently the only way a municipality can provide working capital is either by levying a rate, which is in excess of its actual needs, or in charging such a price for electricity as will allow it to accumulate a profit which can be used for the purposes of working capital.

*Manchester.* The surplus funds created out of revenue amount to £304,612. Of this sum the reserve fund, amounting to £20,387, is specifically invested in government securities, and £234,225 have been applied in redemption of debt. The balance of £50,000 has been applied as to £30,908 in capital outlay and as to £19,092 in the provision of working capital.

*Liverpool.* The net working capital is £11,789, being the value of stock on hand and debts owing to the plant, after deducting the amount owing to sundry creditors. This working capital has been provided out of bank overdraft.

*Glasgow.* Working capital has been provided out of the surplus funds created out of revenue, amounting to £237,091, of which £178,531 have been invested in the works, and the balance of £58,560 is represented by stock and debts, less the amount due to sundry creditors, as follows:

| | |
|---|---|
| Loan debt outstanding | £1,206,332 |
| Loans repaid by means of sinking fund | 83,668 |
| | £1,290,000 |
| Add: Surplus and other funds | 153,423 |
| | £1,443,423 |
| Deduct: Capital outlay | 1,384,863 |
| | £58,560 |

Made up as follows:

| | |
|---|---|
| Debts owing to plant | £24,826 |
| Stocks on hand | 41,990 |
| Cash in bank | 878 |
| | £67,694 |
| Deduct: Sundry creditors | 9,134 |
| | £58,560 |

*St. Pancras.* Working capital was provided out of surplus funds, built up from revenue account, as follows:

| | |
|---|---|
| Loan debt outstanding | £423,654 |
| Loan debt repaid by means of sinking fund | 54,803 |
| | £478,457 |
| Add: Surplus and other funds | 35,631 |
| | £514,088 |
| Deduct: Capital outlay | 498,027 |
| | £16,061 |

Made up as follows:

| | |
|---|---|
| Sundry debtors | £25,967 |
| Stores in hand | 6,613 |
| Cash in bank and in hand | 30,905 |
| | £63,485 |
| Less: Sundry creditors | £47,424 |
| | £16,061 |

*Newcastle—Supply.* Working capital was supplied by this company in debts owing to sundry creditors, as the amount owing to sundry creditors exceeds the accounts payable to the company and stock on hand. Table showing the amount of working capital raised follows:

| | | | |
|---|---|---|---|
| Share capital | | | £750,000 |
| Loan debt outstanding | | | 250,000 |
| Temporary loans | | | 61,089 |
| | | | £1,061,089 |
| Add: Surplus and other funds | | | 199,304 |
| | | | £1,260,393 |
| Deduct: Capital outlay | | £1,211,286 | |
| Office furniture | | 5,320 | 1,216,606 |
| | | | £43,787 |

Made up as follows:

| | |
|---|---|
| Sundry debtors | £59,924 |
| Stores on hand | 31,396 |
| Cash in bank and on hand | 4,023 |
| Investments | 115,125 |
| | £210,468 |
| Deduct sundry creditors | 166,681 |
| | £43,787 |

*Newcastle—District.* Working capital is provided by means of bank overdrafts, temporary loans and surplus funds:

| | | | |
|---|---|---|---|
| Share capital | | | £234,851 |
| Loan debt outstanding | | | 150,000 |
| | | | £384,851 |
| Add: Temporary loans | | | 36,200 |
| Surplus and other funds | | | 22,234 |
| | | | £443,285 |
| Deduct from capital outlay | | | 470,518 |
| | | | £27,233 |

Made up as follows:

| | | | |
|---|---|---|---|
| Bank overdraft | | | £6,763 |
| Sundry creditors | | | 34,824 |
| | | | £41,587 |
| Less: Debts due to plant | | £13,500 | |
| Stores on hand | | 736 | |
| Cash in hand | | 118 | 14,354 |
| | | | £27,233 |

*London—City.* Working capital was raised by bank overdrafts, surplus funds and premiums on shares:

| | |
|---|---|
| Capital outlay | £2,036,071 |
| Less: Loans and share capital | 1,805,950 |
| Overexpended | £230,121 |
| Surplus and other funds | 273,286 |
| Working capital | £43,165 |

Made up as follows:

| | |
|---|---|
| Sundry assets | £191,501 |
| Sundry creditors | 148,336 |
| Working capital | £43,165 |

The surplus funds provided out of revenue, etc., are invested in the outlay on plant.

*Westminster.* Working capital was raised by means of surplus funds, built up out of revenue. Table showing this follows:

| | |
|---|---|
| Share capital | £751,000 |
| Loan debt outstanding | 250,000 |
| Add: Surplus and other funds | 231,479 |
| | £1,232,479 |
| Deduct: Capital outlay | 1,052,781 |
| | £179,698 |

Made up as follows:

| | |
|---|---|
| Sundry debtors | £73,631 |
| Stock of stores | 2,157 |
| Cash in bank and in hand | 44,561 |
| Investments | 66,064 |
| Central Electric Supply Company | 60,863 |
| | £247,276 |
| Deduct: Sundry creditors | 67,578 |
| | £179,698 |

*St. James.* Working capital was secured by means of capital stock, loans and surplus funds, built up out of revenue. Table showing working capital is as follows:

| | |
|---|---|
| Share capital | £300,000 |
| Loan capital | 150,000 |
| | £450,000 |
| Less: Capital outlay | 431,657 |
| | £18,343 |
| Add: Surplus and other funds | 69,665 |
| | £88,008 |

Made up as follows:

| | |
|---|---|
| Investments, etc. | £81,347 |
| Stores on hand | 7,373 |
| Sundry debtors | 29,897 |
| Cash in hand and in bank | 6,486 |
| | £125,103 |
| Less: Sundry creditors | 37,095 |
| | £88,008 |

*Central.* This company raised working capital by loans from the bank and uninvested reserve funds, built up out of revenue account:

| | |
|---|---|
| Accounts receivable | £24,610 |
| Stores | 2,891 |
| Cash | 1,814 |
| | £29,315 |

Made up as follows:

| | |
|---|---|
| Creditors | £7,991 |
| Bank loans | 20,000 |
| From reserve funds | 1,324 |
| | £29,315 |

SUMMARY: SOURCES OF WORKING CAPITAL.

Manchester—Surplus funds out of revenue.

Liverpool—Bank overdraft.

Glasgow—Surplus funds out of revenue.

St. Pancras—Surplus funds out of revenue.

Newcastle-Supply—Amounts owing to sundry creditors exceeds debts owing to company and stocks on hand.

Newcastle-District—Bank overdraft, temporary loans and surplus funds.

London-City—Bank overdraft, surplus funds and premiums on shares.

Westminster—Surplus funds out of revenue.

St. James—Loans, surplus funds out of revenue and capital stock.

Central—Loan from bank and uninvested reserve funds.

J 7. What provisions have been made for payment of capital liabilities when due?

See inquiries B 3, D 22, D 25, I 27, I 28 and I 33.

J 8. Give the cash capital raised by the undertaking.

In the following table all items of premium added on conversion of capital stock or loans to a lower rate per cent. have been eliminated from the liabilities as shown in the balance sheets below. We have added to the capital stock and loans appearing

in the balance sheets all items of premiums received on issue of the same which have been credited to premium capital account or reserve or other funds in the accounts of the plant. We have also, where possible, deducted from the capital outlay (as shown in the balance sheets) all items of premium and good-will which are thus included.

In municipal plants we have added to the loan debt outstanding the amount of loans actually repaid out of sinking fund in order to arrive at the original capital raised for purposes of the undertaking. This is the only way in which the capital raised by municipalities can be compared with the capital raised by private companies, in which latter case no repayment of capital is required to be provided out of revenue.

| | *Loan Capital Raised.* | | *Capital Stock Raised.* | *Total Capital Raised.* | *Total Capital Expended on Works.* |
|---|---|---|---|---|---|
| | *Still Outstanding.* | *Repaid by Sinking Fund.* | | | |
| | £ | £ | £ | £ | £ |
| Manchester ..... | 1,978,235 | 234,225 | ..... | 2,212,460 | 2,199,690 |
| Liverpool ..... | 1,405,993 | 113,209 | ..... | 1,519,202 | 1,849,775 |
| Glasgow ..... | 1,206,332 | 83,668 | ..... | 1,290,000 | 1,384,863 |
| St. Pancras..... | 423,654 | 54,803 | ..... | 478,457 | [1]498,027 |
| Municipalities ..... | 5,014,214 | 485,905 | ..... | 5,500,119 | 5,932,355 |
| Newcastle-Supply ... | 250,000 | ..... | 905,676 | 1,155,676 | 1,211,286 |
| Newcastle-District .. | 150,000 | ..... | 255,069 | 405,069 | 470,518 |
| London-City ..... | 765,280 | ..... | 1,185,950 | 1,951,230 | 2,036,071 |
| Westminster ..... | 250,000 | ..... | 776,000 | 1,026,000 | 1,052,781 |
| St. James..... | 141,500 | ..... | 376,043 | 517,543 | [1]431,657 |
| Central ..... | 339,376 | ..... | 100,000 | 439,376 | 451,903 |
| Companies ..... | 1,896,156 | ..... | 3,598,738 | 5,494,894 | 5,654,216 |
| Total ..... | 6,910,370 | 485,905 | 3,598,738 | 10,995,013 | 11,586,571 |

It will be noticed from the above table that the municipalities have expended more capital than they have raised. This arises from the fact that in many cases the surplus funds provided out of revenue have been used in extension of works. In the case of private undertakings capital expenditure is also greater than the capital raised. This is explained by the fact that private undertakings employ part of the capital raised in providing working capital.

[1] In all instances the capital outlay is stated at the original cost, except in the cases of St. Pancras and St. James, where the values are after deducting depreciation.

## K—Assets and Liabilities.

### K 1. Summary of balance sheet:

| *Assets and Outlay.* | *Manchester.* | *Liverpool.* | *Glasgow.* | *St. Pancras.* | *Newcastle-Supply.* | *Newcastle-District.* | *London-City.* | *Westminster.* | *St. James.* | *Central.* |
|---|---|---|---|---|---|---|---|---|---|---|
| Capital outlay..... | £2,199,690 | £1,849,775 | £1,384,863 | £498,027 | £1,216,606 | £470,518 | £2,041,071 | £1,052,781 | £431,657 | £451,903 |
| Other assets..... | 180,004 | 233.040 | 67,694 | 63,485 | 210,468 | 14,354 | 186,502 | 247,276 | 125,103 | 42,386 |
| Premiums and bonuses. | ..... | (?) | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Total ..... | £2,379,694 | £2,082,815 | £1,452,557 | £561,512 | £1,427,074 | £484,872 | £2,227,573 | £1,300,057 | £556,760 | £494,289 |

| *Liabilities and Funds.* | *Manchester.* | *Liverpool.* | *Glasgow.* | *St. Pancras.* | *Newcastle-Supply.* | *Newcastle-District.* | *London-City.* | *Westminster.* | *St. James.* | *Central.* |
|---|---|---|---|---|---|---|---|---|---|---|
| Capital stock..... | ..... | ..... | ..... | ..... | £750,000 | £234,851 | £1,105,950 | £751,000 | £300,000 | £100.000 |
| Loan debt secured.... | £1,978,236 | £1,405,994 | £1,206,332 | £423,654 | 250,000 | 150,000 | 700,000 | 250,000 | 150,000 | 336.876 |
| Other liabilities..... | 96,846 | 269,934 | 9,134 | 47,424 | 227,770 | 77,787 | 148,336 | 67,578 | 37,095 | 27,991 |
| Surplus and funds.... | 304,612 | 406,887 | 237,091 | 90,434 | 199,304 | 22,234 | 273,287 | 231,479 | 69,665 | 29,422 |
| Total ..... | £2,379,694 | £2,082.815 | £1,452,557 | £561,512 | £1,427,074 | £484,872 | £2,227,573 | £1,300,057 | £556,760 | £494,289 |

### K 2. Assets and outlay further analyzed.

| | *Manchester.* | *Liverpool.* | *Glasgow.* | *St. Pancras.* | *Newcastle-Supply.* | *Newcastle-District.* | *London-City.* | *Westminster.* | *St. James.* | *Central.* |
|---|---|---|---|---|---|---|---|---|---|---|
| *Capital Outlay:* | | | | | | | | | | |
| Parliam't'y exp... | ..... | [1]£50,851 | ..... | ..... | £29,111 | £1,330 | £12,848 | £3,482 | £1,459 | £7,709 |
| Works and Plant. | £2,199,690 | 1,798,924 | £1,384,863 | £498,027 | 1,187,495 | 469,188 | 2,028,223 | 1,049,299 | 430,198 | 444,194 |
| *Other Assets:* | | | | | | | | | | |
| Debts due..... | 77,118 | 69,696 | 24,826 | 25,967 | 59,924 | 13,500 | 87,715 | 73,631 | 29,897 | 24,610 |
| Stocks on hand... | 36,786 | 7,783 | 41.990 | 6,613 | 31,396 | 736 | 32,437 | 2,157 | 7,373 | 2,891 |
| Cash ..... | 45,713 | ..... | 878 | 30.905 | 4,023 | 118 | 7,047 | 44,561 | 6,486 | 1,814 |
| Funds invested... | 20,387 | 26,471 | ..... | ..... | 115,125 | ..... | 59,303 | 126,927 | 81,347 | 13,071 |
| Sinking fund..... | ..... | 129,090 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| *Premiums from Purchase and Bonuses* | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Total ..... | £2,379,694 | £2,082,815 | £1,452,557 | £561,512 | £1,427,074 | £484,872 | £2,227,573 | £1,300,057 | £556,760 | £494,289 |

[1] Including expenses of issue of stock amounting to £41,080 and advance interest of £5,389.

K 3. Analysis of special items where possible.

In some cases it is impossible to obtain any detailed analysis of capital outlay except as to works undertaken by the municipality. This difficulty arises from the fact that the municipality has purchased from the private company at a lump sum, and also in the case of private undertakings that they have purchased from other companies or have been formed by the amalgamation of two or more companies.

*Manchester.* "Capital outlay" is made up of:

| | |
|---|---|
| Generating stations— | |
| Land | £75,607 |
| Buildings | 314,027 |
| Machinery and switchboards | 581,871 |
| Stuart street viaduct, permanent way, etc | 77,862 |
| Battery station—Building and machinery | 6,668 |
| Distributing stations—Land, buildings and machinery | 263,564 |
| Spare plant | 4,058 |
| Suspense account | 2,930 |
| Mains | 760,443 |
| Meters | 48,770 |
| Motors | 8,646 |
| Electrical instruments | 4,378 |
| Cable stores—Land, buildings and machinery | 30,532 |
| Cottage property | 2,456 |
| Office furniture | 2,288 |
| Engineers' remuneration | 15,600 |
| Total | £2,199,690 |

*Liverpool.* "Capital Outlay" is composed of:

| | | |
|---|---|---|
| Purchase money paid to Liverpool Electric Company | | £400,000 |
| Additional capital spent by the company but not included in share capital | | 36,474 |
| Purchase money paid to the Garston & District Co | | 48,080 |
| Outlay by City: | | |
| Lands | £7,625 | |
| Buildings | 222,996 | |
| Machinery | 487,146 | |
| Accumulators | 8,580 | |
| Mains | 553,239 | |
| Meters | 28,493 | |
| Electrical instruments | 6,180 | |
| Patents | 111 | |
| | | 1,314,370 |
| Cost of Board of Trade Order | | 3,481 |
| Discount and expenses of issue of stock | | 41,981 |
| Advance interest on stock | | 5,389 |
| Total | | £1,849,775 |

*Glasgow.* "Capital Outlay" consists of:

| | *Original Cost.* | *Depreciation Written Off.* | *Value May 31, 1905.* |
|---|---|---|---|
| Land ..... | £207,581 | £2,663 | £48,967 |
| Buildings ..... | | | 155,951 |
| Steam plant and electric.. | 355,998 | 67,400 | 288,598 |
| Lines ..... | 761,445 | 54,679 | 706,766 |
| Meters ..... | 54,174 | 11,628 | 42,546 |
| Electrical instruments.... | 1,687 | 352 | 1,335 |
| Office furniture and misc. | 3,978 | 3,978 | ..... |
| Total ..... | £1,384,863 | £140,700 | £1,244,163 |

*St. Pancras.* "Capital Outlay" is composed of:

| | |
|---|---|
| Lands, including law charges on acquisition..... | £41,747 |
| Building and paving..... | 63,548 |
| Machinery, plant and tools..... | 139,293 |
| Mains, including cost of laying the mains and services, and royalties..... | 222,267 |
| Public lamps..... | 1,334 |
| Meters, indicators, switches, etc..... | 24,967 |
| Electrical instruments, etc..... | 1,445 |
| Office and other furniture and fittings..... | 596 |
| Extensions, mains for scheme D of arc lighting..... | 2,830 |
| Total ..... | £498,027 |

*Newcastle—Supply.* "Capital Outlay" is made up of:

| | | |
|---|---|---|
| Lands, including law charges on acquisition..... | | £49,448 |
| Buildings ..... | | 120,228 |
| Machinery ..... | | 438,731 |
| Accumulators at stations..... | | 18,683 |
| Mains and cost of laying..... | | 347,294 |
| Transformers, motors and installations on consumers' premises ..... | | 123,740 |
| Meters ..... | | 22,902 |
| Electrical instruments, etc..... | | 43,165 |
| Office furniture ..... | | 5,320 |
| Whitley & Monkseaton and other orders—mains, plant, etc., purchased..... | | 17,994 |
| Cost of license, provisional orders, etc.— | | |
| Own powers..... | £28,261 | |
| Whitley, etc., order..... | 850 | 29,111 |
| Total ..... | | £1,216,606 |

"Investments" consists of the following items:

| | |
|---|---|
| Priestman Power Co., Ltd., 10,000 shares at £1..... | £10,000 |
| Tyneside Tramways and Tramroads Co., 1,300 shares at £10 each..... | 13,000 |

| | |
|---|---|
| County of Durham Electrical Power Distribution Co., Ltd.— | |
| 10 preference shares at £5 each | £50 |
| 9,815 ordinary shares at £5 each | 49,075 |
| Building Societies' loans | 43,000 |
| Total | £115,125 |

*Newcastle—District.* "Capital Outlay" is as follows:

| | *Newcastle.* | *Newburn.* | *Total.* |
|---|---|---|---|
| Lands | £42,491 | £3,350 | £45,841 |
| Buildings | 42,127 | 11,461 | 53,588 |
| Plant and machinery | 118,507 | 19,719 | 138,226 |
| Accumulators at stations | 9,773 | ..... | 9,773 |
| Mains | 143,217 | 21,249 | 164,466 |
| Transformers, motors, etc | 27,337 | [1]3,838 | 31,175 |
| Meters, and fees for certifying | 18,112 | 254 | 18,366 |
| Electrical instruments | 1,565 | 598 | 2,163 |
| Free wiring | 1,122 | 576 | 1,698 |
| Cost of license, provisional order | 810 | 520 | 1,330 |
| Office furniture | 592 | ..... | 592 |
| | £405,653 | £61,565 | £467,218 |
| Add Suspense account | | | 3,300 |
| | | | £470,518 |

*London—City.* "Capital Outlay" is made up of:

| | |
|---|---|
| Machinery and plant | £669,748 |
| Mains, including cost of laying and repaving | 584,447 |
| Telephone conduits now in use | 51,378 |
| Wiring, motors and fittings on hire | 2,545 |
| Transformers and accessories | 77,802 |
| Meters and electrical instruments | 70,847 |
| Lamp posts, lanterns, lamps and accessories | 28,427 |
| Tools and plant | 13,883 |
| Office furniture and fixtures | 1,753 |
| Buildings | 225,074 |
| Freehold and leasehold land and buildings | 161,223 |
| Warehouses and other works at Wool Quay | 48,877 |
| Artisans dwellings and other premises sublet at Bankside (excluding cost of land) | 12,038 |
| Cost of obtaining Southwark Provisional Order, 1891, expenditure on mains, meters, etc | 38,453 |
| Proportion of management and general expenses, chargeable to capital[2] | 41,728 |

[1] Motors only.

[2] These charges were all expended prior to 1897. They include rates and taxes, rents, salaries, directors' fees, remuneration of chief engineer, professional charges, etc., and were approved by both the Board of Trade and professional auditors.

| | |
|---|---|
| Cost of obtaining three provisional orders under agreements with contractors; expenses in connection with 1893 and 1900 Acts, etc | £7,848 |
| Suspense account[1] | 5,000 |
| | £2,041,071 |

*Westminster.* "Capital Outlay" is composed of:

| | |
|---|---|
| Lands, including law charges at acquisition | £49,560 |
| Buildings | 232,879 |
| Plant and Machinery | 268,679 |
| Mains | 387,442 |
| Meters and cost of certifying | 59,947 |
| Instruments | 1,661 |
| Purchase of City of Westminster Electrical Syndicate | 10,133 |
| Furniture and fittings, less depreciation | 1,391 |
| Public lighting, arc lamps, fittings and connections | 37,607 |
| Provisional orders, etc | 3,482 |
| | £1,052,781 |

"Investments" consists principally of debenture stock of the Central company amounting to over £60,863 and share capital in the same company to the extent of £50,000.

*St. James.* "Capital Outlay" consists of the following:

| | |
|---|---|
| Freehold land, including law charges at acquisition | £126,208 |
| Buildings and paving | 105,243 |
| Machinery and fixed plant | 98,425 |
| Tools and loose plant | 1,094 |
| Accumulators | 1,015 |
| Mains, including cost of laying | 82,382 |
| Meters fixed on installations | 4,740 |
| Switches fixed on installations | 1,946 |
| Stores and labor used on installations | 5,751 |
| Electrical instruments | 1,281 |
| Office furniture and fixtures | 1,091 |
| Artesian well | 1,022 |
| Cost of license and provisional order Board of Trade inquiry and Parliamentary and legal expenses | 1,459 |
| | £431,657 |

"Investments" includes:

| | |
|---|---|
| Central Electric Supply Co., Ltd.— | |
| 10,000 £5 ordinary shares | £50,000 |
| 5,000 4 per cent. Debenture Stock | 4,213 |
| Birmingham Corporation: | |
| £12,000 3 per cent. stock | 11,620 |

[1] The formation expenses of the company have been written off out of revenue. In 1905 the directors placed £7,500 to a suspense account to provide Parliamentary charges, which they propose to write off out of revenue in three years.

| | |
|---|---|
| Cape Town Consolidated 3 per cent. stock: £16,300 stock | £15,514 |
| Total | £81,347 |

(The market value December 31, 1905, of the last three items was £30,636.)

*Central.* "Capital Outlay" consists off:

| | |
|---|---|
| Land, including law charges at acquisition | £136,092 |
| Buildings, including leasehold properties, railway siding and other works | 115,151 |
| Machinery and fixed plant | 144,774 |
| Mains, including cost of laying | 39,538 |
| Tools and loose plant | 2,264 |
| Accumulators | 723 |
| Office furniture and fixtures | 285 |
| Electrical instruments | 195 |
| Artesian well | 936 |
| Management and general charges | 4,236 |
| | £444,194 |

"Sinking Fund" was invested in:

| | |
|---|---|
| £6,566 Metropolitan 2½ per cent. stock | £5,265 |
| £6,846 New South Wales 3 per cent. stock | 6,190 |
| | £11,455 |
| Other investments were £1,473 2½ per cent. Consols. | 1,616 |
| Total | £13,071 |

The above investments are included in the list of assets at the above costs, whereas the actual value at the end of 1905 was £618 in excess of that amount.

K 4. Do the values above given represent the original cost of the present assets, their present market value, or cost of duplication? State how values were fixed?

*Municipalities.* Original cost.

*Newcastle—Supply, District.* Original cost.

*London—City.* Capital expenditure is original cost with cost of dismantled items deducted therefrom.

*Westminster, Central.* Original cost.

*St. James.* Original cost less depreciation.

K 5. Liabilities and Funds further analyzed.

| | *Manchester.* | *Liverpool.* | *Glasgow.* | *St. Pancras.* | *Newcastle-Supply.* | *Newcastle-District.* | *London-City.* | *Westminster.* | *St. James.* | *Central.* |
|---|---|---|---|---|---|---|---|---|---|---|
| *Capital Stock*..... | ..... | ..... | ..... | ..... | £750,000 | £234,851 | £1,105,950 | £751,000 | £300,000 | £100,000 |
| *Loan Debt Secured*... | £1,978,236 | £1,405,994 | £1,206,332 | £423,654 | 250,000 | 150,000 | 700,000 | 250,000 | 150,000 | 336,876 |
| *Other Liabilities:* | | | | | | | | | | |
| Loans unsecured. | ..... | ..... | ..... | ..... | 61,089 | 36,200 | ..... | ..... | ..... | 20,000 |
| Bank overdraft.. | 6,786 | 204,244 | ..... | 35,428 | ..... | 6,763 | 79,500 | ..... | ..... | ..... |
| Consumers deposits ..... | 5,901 | 10,199 | 1,629 | 1,040 | ..... | ..... | 1,847 | 533 | ..... | ..... |
| Sundry creditors. | 84,159 | 55,491 | 7,505 | 10,956 | 166,681 | 34,824 | 66,989 | 67,045 | 37,095 | 7,991 |
| *Surplus and Funds:* | | | | | | | | | | |
| Loan debt repaid. | 234,225 | 113,209 | 83,668 | 54,803 | ..... | ..... | ..... | ..... | ..... | ..... |
| Sinking fund unapplied ..... | ..... | 129,090 | ..... | ..... | ..... | ..... | ..... | 32,959 | ..... | 18,156 |
| Depreciation fund | ..... | ..... | 140,700 | ..... | 156,000 | 7,500 | ..... | 162,755 | ..... | 6,300 |
| Contingency fund. | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2,500 | ..... |
| Renewals fund... | 50,000 | 68,971 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Reserve fund.... | 20,387 | 95,617 | 12,723 | 35,631 | 12,184 | 14,500 | 197,721 | 27,104 | 66,529 | 4,668 |
| Debenture stock premium redemption act. | ..... | ..... | ..... | ..... | ..... | ..... | 53,331 | ..... | ..... | ..... |
| Suspense account. | ..... | ..... | ..... | ..... | 29,765 | ..... | ..... | ..... | ..... | ..... |
| Profit and loss balance ..... | ..... | ..... | ..... | ..... | 1,355 | 234 | 22,235 | 8,661 | 636 | 298 |
| Total ..... | £2,379,694 | £2,082,815 | £1,452,557 | £561,512 | £1,427,074 | £484,872 | £2,227,573 | £1,300,057 | £556,760 | £494,289 |
| Profit in aid of rate since commencement ..... | £52,964 | £66,585 | ..... | £18,220 | ..... | ..... | ..... | ..... | ..... | ..... |

K 6. Special items analysed where possible.

*Municipalities.* Three of the four plants had bank overdrafts. This might appear misleading unless attention is drawn to the fact that in each case the municipality had cash to its credit in the bank on other accounts, and that the subdivision was merely an accounting convenience in order to keep each fund distinct. These overdrafts were as follows:

| | *Overdraft on* | | *Set Off Against Cash in Bank.* | |
|---|---|---|---|---|
| *Town.* | *Capital Account.* | *Revenue Account.* | *On What Account.* | *Amount.* |
| Manchester ..... | ..... | £6,786 | Capital. | £43,680 |
| Liverpool ..... | £192,455 | 11,789 | General Funds of City. | 285,342 |
| Glasgow ..... | ..... | ..... | ..... | ..... |
| St. Pancras ..... | 20,581 | 14,847 | Reserve Fund. | 30,898 |

*Liverpool.* "Loan debt secured" consists of mortgages, £750,382, and corporation stock, £655,612.

*St. Pancras.* "Sundry creditors" is made up of trade accounts, £5,956, and amount due in aid of rate, £5,000.

*Newcastle—Supply.* "Sundry creditors" consists of unpaid accounts, £136,752, and unpaid dividends, £29,929.

*Newcastle—District.* "Sundry creditors" is made up of unpaid accounts, £29,391, and unpaid dividends, £5,433.

*London—City.* "Sundry creditors" consists of:

| | |
|---|---|
| Sundry tradesmen..... | £8,714 |
| Open accounts..... | 7,455 |
| Debenture interest..... | 15,912 |
| Unclaimed dividends..... | 35 |
| Preference dividends..... | 11,400 |
| Ordinary dividends..... | 23,473 |
| | £66,989 |

*Westminster.* "Sundry creditors" is made up of:

| | |
|---|---|
| Tradesmen's accounts..... | £25,579 |
| Unclaimed dividends..... | 4 |
| Dividends due..... | 37,306 |
| Debenture interest..... | 4,156 |
| | £67,045 |

In addition to the foregoing liabilities this company has jointly with the St. James and Pall Mall Electric Light Company Limited, guaranteed the principal and interest on £500,000 4 per cent. debenture stock of the Central Electric Supply Company, Limited, of which £336,876 had been issued at December 31, 1905.

*St. James.* "Sundry creditors" is composed as follows:

| | |
|---|---|
| Shareholders for dividends..... | £18,500 |
| Open accounts ..... | 12,909 |
| Amounts due on construction..... | 3,150 |
| Interest on debentures less tax..... | 2,494 |
| Unclaimed dividends..... | 42 |
| | £37,095 |

## L—Revenue Accounts.

### L 1. Summary.

| *Revenue Account* | *Manchester.* | *Liverpool.* | *Glasgow.* | *St. Pancras.* | *Newcastle-Supply.* | *Newcastle-District.* | *London-City.* | *Westminster.* | *St. James.* | *Central.* |
|---|---|---|---|---|---|---|---|---|---|---|
| Income ..... | £302,200 | £246,367 | £186,372 | £71,428 | £140,308 | £34,282 | £261,995 | £233,101 | £115,673 | £55,402 |
| Expenditure ..... | 118,016 | 82,435 | 62,071 | 35,562 | 67,395 | 17,759 | 101,942 | 112,101 | 60,945 | 29,013 |
| Gross profit carried to profit and loss a/c. | £184,184 | £163,932 | £124,301 | £35,866 | £72,913 | £16,523 | £160,053 | £121,000 | £54,728 | £26,389 |

### L 2. Revenue account—credits.

| *Income.* | *Manchester.* | *Liverpool.* | *Glasgow.* | *St. Pancras.* | *Newcastle-[5] Supply.* | *Newcastle-District.* | *London-City.* | *Westminster.* | *St. James.* | *Central.* |
|---|---|---|---|---|---|---|---|---|---|---|
| Private lighting..... | £159,300 | 145,785 | [1]£149,917 | [2]£59,998 | £35,180 | £32,570 | £227,798 | £208,345 | £109,830 | £52,595 |
| Commercial power.... | 23,260 | | [1]25,005 | | 50,818 | | | | | |
| Tramways ..... | 117,590 | 92,876 | ..... | ..... | 36,333 | ..... | | ..... | ..... | |
| Public lighting ..... | 676 | 2,363 | 11,450 | [3]10,049 | 1,307 | ..... | 12,989 | [1]16,624 | 1,867 | |
| Rents, meters..... | 383 | 2,563 | ..... | [4]196 | 2,429 | 1,191 | 10,031 | 8,032 | 3,415 | 7 |
| Rents, apparatus..... | 942 | ..... | ..... | ..... | [6]11,293 | 338 | 459 | | 85 | ..... |
| Net profit from man'f. & sale of apparatus | ..... | 2,156 | ..... | ..... | 1,594 | ..... | ..... | ..... | ..... | ..... |
| Rents, property ..... | 49 | 623 | ..... | 269 | 1,291 | 169 | 9,326 | ..... | 291 | 2,384 |
| Transfer fees ..... | ..... | 1 | ..... | ..... | 63 | 14 | 79 | 100 | 34 | 8 |
| Other Receipts..... | ..... | ..... | ..... | 916 | ..... | ..... | 1,313 | ..... | 151 | 408 |
| Total ..... | £302,200 | £246,367 | £186,372 | £71,428 | £140,308 | £34,282 | £261,995 | £233,101 | £115,673 | £55,402 |

### L 3. Revenue account—debits.

| *Expenditures.* | *Manchester.* | *Liverpool.* | *Glasgow.* | *St. Pancras.* | *Newcastle-Supply.* | *Newcastle-District.* | *London-City.* | *Westminster.* | *St. James.* | *Central.* |
|---|---|---|---|---|---|---|---|---|---|---|
| Generation ..... | £70,197 | £61,784 | £30,060 | £24,080 | £31,053 | £14,366 | £59,642 | £49,328 | £24,176 | £23,304 |
| Current purchased ... | ..... | ..... | 7,720 | ..... | ..... | ..... | ..... | 32,325 | 17,503 | 99 |
| Distribution ..... | 35,505 | 4,108 | 12,909 | 5,869 | 11,721 | 925 | 14,064 | 8,551 | 8,503 | 26 |
| General ..... | 12,314 | 16,543 | 11,382 | 5,673 | 24,621 | 2,468 | 28,236 | 21,897 | 10,673 | 5,494 |
| | £118,016 | £82,435 | £62,071 | £35,562 | £67,395 | £17,759 | £101,942 | £112,101 | £60,945 | £29,018 |

Notes to L 2 are upon page 380.

| | *Manchester.* | *Liverpool.* | *Glasgow.* | *St. Pancras.* | *Newcastle-Supply.* | *Newcastle-District.* | *London-City.* | *Westminster.* | *St. James.* | *Central.* |
|---|---|---|---|---|---|---|---|---|---|---|
| *Generation:* | | | | | | | | | | |
| Fuel | £36,513 | £35,352 | £16,335 | £13,008 | £15,651 | £7,581 | £30,620 | £26,659 | £14,884 | £13,742 |
| Oil, water, etc. | 4,968 | 4,860 | 2,552 | 1,386 | 1,480 | 1,844 | 1,346 | 3,296 | 1,358 | 2,212 |
| Wages | 12,255 | 14,976 | 6,669 | 4,354 | 9,110 | 4,071 | 7,453 | 8,560 | Note [8] | 3,554 |
| Salaries | 2,846 | (?) | 321 | 450 | | | 12,144 | 3,195 | [8]3,476 | 1,342 |
| Maintenance, renewals, repairs | 12,008 | 6,596 | 4,183 | 4,722 | 4,812 | 870 | 7,663 | 7,618 | 4,336 | 2,485 |
| Other generation | 1,607 | ..... | ..... | 160 | ..... | ..... | 416 | ..... | 122 | 59 |
| *Current purchased* | ..... | ..... | 7,720 | ..... | ..... | ..... | ..... | 32,325 | 17,593 | 99 |
| *Distribution:* | | | | | | | | | | |
| Wages | 12,985 | 1,694 | 2,047 | 1,306 | 3,986 | 665 | 4,313 | 6,398 | [8]6,353 | ..... |
| Salaries | 1,446 | (?) | (?) | 506 | | 260 | 3,904 | | Note [8] | ..... |
| Maintenance, renewals, repairs | 18,609 | 2,414 | [4]10,862 | 3,671 | 7,735 | ..... | 5,668 | 2,153 | 2,150 | 14 |
| Other distribution | 2,465 | ..... | ..... | 326 | ..... | ..... | 179 | ..... | ..... | 12 |
| *General:* | | | | | | | | | | |
| Directors' allowances | ..... | ..... | ..... | ..... | 630 | 600 | 11,596 | 3,000 | 2,500 | 750 |
| Salaries | 6,526 | 9,116 | 4,589 | 2,648 | 7,359 | 400 | | 8,663 | 4,893 | 1,400 |
| Auditing | ..... | Note [3] | Note [6] | ..... | | | | | | |
| [1]Superannuation schemes, etc. | 369 | ..... | ..... | ..... | ..... | ..... | 304 | ..... | ..... | ..... |
| Legal expenses | 225 | Note [3] | Note [6] | 233 | 1,030 | 51 | 492 | [4]4,298 | 1,160 | 2,661 |
| Injuries, damages and claims | ..... | ..... | ..... | ..... | ..... | ..... | 84 | ..... | ..... | ..... |
| Insurance—fire, boiler & accident | 160 | 824 | ..... | 302 | 1,572 | ..... | 1,653 | 930 | 500 | 313 |
| Bad debts | 358 | 105 | ..... | 401 | 307 | 130 | 170 | 85 | 243 | 107 |
| Rents | 1,809 | 2,047 | 1,330 | 227 | ..... | 600 | 705 | Note [9] | Note [9] | ..... |
| Office expenses and management | 1,990 | 1,377 | [5]2,587 | 802 | 6,826 / 6,897 | 687 | 7,682 / 2,746 | 1,750 / 1,681 | 255 / 819 | 115 / 148 |
| [2]Other general | 877 | 3,074 | [6]2,876 | 1,060 | ..... | ..... | [10]2,804 | 1,490 | 303 | ..... |
| Total | £118,016 | £82,435 | £62,071 | £35,562 | £67,395 | £17,759 | £101,942 | £112,101 | £60,945 | £29,013 |

Notes to this table are upon page 380.

The following notes are to L 2.

[1] The quantity of electricity sold to private consumers by meter was as follows:

| | |
|---|---|
| 3,743,827 units, at 6d. | £93,596 |
| 1,829,078 units, at 3½d. | 26,674 |
| 146,542 units, at 3d. | 1,832 |
| 664 units, at 2d. | 5 |
| 3,830,332 units, at 1½d. | 23,939 |
| 5,742,660 units, at 1d. | 23,928 |
| 1,349,150 units, at ½d. | 4,216 |
| 16,642,253 | £174,190 |

There were also 80,710 units sold unmetered and 1,525,505 units for public lighting.

[2] Sales of current by meter were as follows:

| | |
|---|---|
| 848,799 units, at 6d. | £21,220 |
| 830 units, at 5d. | 17 |
| 1,141,984 units, at 4d. | 19,033 |
| 364,535 units, at 3d. | 4,557 |
| 286,219 units, at 2d. | 2,385 |
| 1,316,759 units, at 1½d. | 8,230 |
| 1,088,848 units, at 1d. | 4,537 |
| Minimum charges | 19 |
| | £59,998 |

[3] Current sold at 1½ d. per unit, 1,607,800 units.

[4] Indicator rentals.

[5] The units sold during the past year at the various rates were as follows:

13,949,923 units sold at less than ¾d.
7,046,844 units sold at ¾d. or more, but less than 1d.
6,582,891 units sold at 1d. or more, but less than 1½d.
833,518 units sold at 1½d. or more, but less than 2d.
234,258 units sold at 2d. or more, but less than 3d.
1,731,418 units sold at 3d. or above.

[6] Including besides rents from motors and other appliances of £2,808, rents from manufacturers' installations of £8,485.

[7] Public lighting, including rental and maintenance of arc lamps, poles, etc. ..... £21,488
Deduct cost of cleaning, recarboning, etc., of public arc lamps, but excluding generation, establishment and other expenses ..... 4,864

The following notes are to L 4.

[1] Includes donations to thrift funds.

[2] Includes expenditures for official clothing, borrowing money, stamp duty, certification of meters, etc.

[3] The item of £3,074 for "other general expenses" includes £2,000 paid to the city to cover the salaries and expenses of city officers who devote part of their time to business of the electricity department, such as the town clerk, treasurer, auditor, etc.

[4] Of this amount £3,482 were expended for attending and repairing public lamps.

[5] Various items are included in office expenses, probably some here left blank.

[6] For lamps and fittings supplied to consumers on change of voltage.

[7] These were high, on account of the cost of opposing a new company seeking to obtain Parliamentary powers to supply electricity throughout the whole of London and a large portion of the adjoining counties.

[8] The wages and salaries are not separated for generation and distribution; that is, the item of £3,476 for salaries includes both generation and distribution, and likewise that of £6,353 for wages.

[9] Deducted from sales of current.

[10] Including £1,336 for "rebates in lieu of collection commissions and various fines."

## M—Profit and Loss.

### M 1. Gross profits—credits.

| | *Manchester.* | *Liverpool.* | *Glasgow.* | *St. Pancras.* | *Newcastle-Supply.* | *Newcastle-District.* | *London-City.* | *Westminster.* | *St. James.* | *Central.* |
|---|---|---|---|---|---|---|---|---|---|---|
| Balance from revenue account | £184,184 | £163,932 | £124,301 | £35,866 | £72,913 | £16,523 | £160,053 | £121,000 | £54,728 | £26,389 |
| Interest on investments and bank balance | 162 | ..... | ..... | ..... | 5,020 | ..... | 1,744 | 3,733 | 3,324 | ..... |
| | £184,346 | £163,932 | £124,301 | £35,866 | £77,933 | £16,523 | £161,797 | £124,733 | £58,052 | £26,389 |

### M 2. Gross profits—debits.

| | *Manchester.* | *Liverpool.* | *Glasgow.* | *St. Pancras.* | *Newcastle-Supply.* | *Newcastle-District.* | *London-City.* | *Westminster.* | *St. James.* | *Central.* |
|---|---|---|---|---|---|---|---|---|---|---|
| Interest on loan debt. | £63,975 | £54,879 | £38,182 | £14,313 | £10,000 | £1,998 | £31,825 | £8,313 | £5,250 | £13,362 |
| Dividends on share capital | ..... | ..... | ..... | ..... | 48,444 | 10,844 | 63,039 | 74,610 | 32,000 | ..... |
| Interest on: | | | | | | | | | | |
| Bank overdraft..... | 135 | ..... | ..... | } 519 { | ..... | 262 | ..... | ..... | ..... | 248 |
| Deposits, etc..... | 196 | ..... | ..... | } | 2,355 | 1,867 | 2,645 | 357 | ..... | ..... |
| Sinking fund installments | 59,193 | 42,478 | 15,475 | 8,178 | ..... | ..... | ..... | ..... | ..... | ..... |
| Rates and taxes..... | 17,976 | 15,800 | 12,526 | 3,179 | 4,152 | 2,454 | 14,680 | 14,794 | 8,264 | 2,488 |
| Balance of net profit carried to profits disposal account.... | 42,871 | 50,775 | 58,118 | 9,677 | 12,982 | [1]902 | 49,608 | 26,059 | 12,538 | 10,291 |
| | £184,346 | £163,932 | £124,301 | £35,866 | £77,933 | £16,523 | £161,797 | £124,733 | £58,052 | £26,389 |

[1] The current year's working showed a loss of £902 after paying the dividends, and this was met by transfers from reserve fund and profit and loss from the previous year.

## M 3. Disposal of net profit.

| | *Manchester.* | *Liverpool.* | *Glasgow.* | *St. Pancras.* | *Newcastle-Supply.* | *Newcastle-District.* | *London-City.* | *Westminster.* | *St. James.* | *Central.* |
|---|---|---|---|---|---|---|---|---|---|---|
| Net profit for the year | £42,871 | £50,775 | £58,118 | £9,677 | £12,982 | £902 | £49,608 | £26,659 | £12,538 | £10,291 |
| Transferred from reserve fund | ..... | ..... | ..... | ..... | ..... | 766 | ..... | ..... | ..... | ..... |
| Amount transferred from credit balance of profit and loss of previous year | ..... | ..... | ..... | 290 | ..... | 136 | ..... | 5,137 | 2,256 | ..... |
| Total to be accounted for | £42,871 | £50,775 | £58,118 | £9,967 | £12,982 | ..... | £49,608 | £31,796 | £14,794 | £10,291 |
| Depreciation fund | ..... | ..... | £39,242 | £445 | £12,500 | ..... | [2]£2,500 | £28,296 | £14,794 | £10,000 |
| Reserve fund | £4,543 | £17,875 | 12,723 | 4,522 | ..... | ..... | 46,750 | 3,500 | ..... | ..... |
| Renewals suspense | 25,000 | 13,160 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Special renewals | 13,328 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Profit applied in aid of rate | ..... | 19,740 | ..... | 5,000 | ..... | ..... | ..... | ..... | ..... | ..... |
| Loss on plant sold | ..... | ..... | 2,599 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Amount added to credit balance of profit and loss | ..... | ..... | [1]3,554 | ..... | 482 | ..... | 358 | ..... | ..... | 291 |
| Total | £42,871 | £50,775 | £58,118 | £9,967 | £12,982 | ..... | £49,608 | £31,796 | £14,794 | £10,291 |
| Making the credit balance in profit and loss account at the end of the year | ..... | ..... | ..... | ..... | £1,354 | £234 | £22,235 | £8,661 | £635 | £208 |

[1] There was a debt balance in the profit and loss account for the previous year, which was wiped out by the credit balance for this year after making a transfer to the reserve fund as shown.

[2] Transfer to the Parliamentary expenses suspense account.

Note.—For general comments and summary of Electricity Finance, see further report at the end of this volume.

# GENERAL HISTORY AND LEGISLATION

## British Tramways

## (Schedule I)

By MILO R. MALTBIE

*Sources*: As Schedule I relates principally to the statutory and legal provisions affecting the undertakings examined, the most important sources are the acts of Parliament and judicial decisions. Of almost equal value are the Sessional Papers, especially in those instances where special reports have been made by select committees of Parliament, and where the evidence has been printed in full (London principally). Occasionally a verbatim report of the proceedings before a Parliamentary committee when a private bill affecting the undertaking, usually for the grant of powers or the extension of capital, may be found, but ordinarily no record is kept, and when printed they are issued by the city or the company itself.

The records, reports and documents of the city department or of the company, as the case may be, often contain much of value, especially those issued when the undertaking was started or when changes in management were mooted or actually made. In the case of municipal plants or when a transfer of the undertaking from the company to the city was being considered, the council minutes are useful.

The principal secondary sources which are of such high standing as to be recognized as authentic are:

Bell and Paton: "Glasgow: Its Municipal Organization and Administration."

Corporation of Glasgow: "Handbook on the Municipal Enterprises."

Hudson, editor: "The Manchester Municipal Code." 6 vols.

Hope: "Handbook Compiled for the Congress of the Royal Institute of Public Health." (Liverpool.)

Hopkins: "Tramway Legislation in London and Tramways Belonging to Local Authorities."

Stanuell: "The General Tramway (Ireland) Acts and Orders in Council Thereunder, with Index."

Garcke: "Manual of Electrical Undertakings and Directory of Officials." 10 vols.

Rawlinson & Johnston: "The Municipal Corporations Acts and Other Enactments * * * " Ninth edition.

Robertson: "The Law of Tramways and Light Railways in Great Britain." Third edition.

The Electrician: "Electrical Trades' Directory and Handbook." Twenty-fourth year.

Will: "The Law Relating to Electric Lighting, Traction and Power." Third edition.

In each town there is usually a considerable amount of pamphlet and periodical literature which throws some light upon the situation.

To supplement the data obtained from the above sources, interviews were had with the principal city officials, officers of the companies, American consuls, and citizens connected in no way with the company or the municipality.

**Principal Acts of General Application.**

Companies Clauses Consolidation Acts, 1845-1889.
Companies Acts, 1862-1900.
Lands Clauses Consolidation Acts, 1845-1895.
Borough Funds Act, 1872, c. 91.
Local Loans Act, 1875, c. 83.
Public Health Act, 1875, c. 55.
Municipal Corporations Act, 1882, c. 50.
Employers' Liability Act, 1880, c. 42.
Local Government Act, 1888, c. 41.
Workmen's Compensation Acts, 1897, c. 37, and 1900.
Electric Lighting Acts, 1882, c. 56; 1888, c. 12; 1899, c. 19.
Electric Lighting (Scotland) Acts, 1890, c. 13; 1902, c. 35.
Tramways Act, 1870, c. 78.
Light Railways Act, 1896, c. 48.

**Individual Undertakings.**

*Glasgow* Street Tramways Act, 1870.
Glasgow Corporation Tramways Acts, 1872, 1875, 1879, 1885.
Glasgow Corporation Acts, 1884; 1891, c. CLXXVI; 1893, c. CCVIII.
Glasgow Corporation (Tramways, Libraries, etc.) Act, 1899, c. CLXVI.
Glasgow Corporation (Improvements and General Powers) Act, 1897, c. CCXV.
Glasgow Corporation (Tramways and General) Order, 1901, c. CLXXIX.
Glasgow Corporation (Water and General) Order, 1902, CCLXI.
Glasgow Corporation Tramways Order, 1903.
Glasgow Corporation (Tramways Consolidation) Order, 1905, c. CXXVIII.
Clydebank Burgh Tramways Order, 1903.
Vale of Clyde Tramways Act, 1871, c. LXV.
Govan Burgh (Tramways) Act, 1893, c. LXIX.

*Manchester* Corporation Tramways Orders, 1875, c. CLXVII; 1878, c. CLXIII; 1881, c. CV; 1893, c. CXCIII; 1896, c. CXX; 1897, c. CLI.
Manchester Corporation Tramways Acts, 1899, c. CCLIV; 1900, c. CCXCI; 1902, c. XLI; 1904, c. CCXI.
Manchester Corporation Acts, 1897, c. CCXLI; 1901, c. CXCIII; 1903, c. CCXIII.
Manchester Suburban Tramways Orders, 1877, c. CXXIV; 1878, c. CLXI.
Manchester Suburban Tramways Act, 1879, c. CXC.
Manchester Carriage and Tramways Company Act, 1880, c. CXLIII.
Manchester Carriage and Tramways Company Orders, 1882, c. CXXXVIII; 1897, c. CLI.
Rusholme Local Board of Health Tramways Orders, 1877, c. CXXIV; 1881, c. CV.
Moss Side Tramways Orders, 1878, c. CCXXXI; 1897, c. CLI.
Moss Side Tramways Act, 1899.
Newton Heath Local Board Tramways Order, 1878, c. CCXXXI.
Withington Tramways Orders, 1880; 1897, c. CLI.
Withington Tramways Acts, 1899, c. CCXX; 1900.
*Liverpool* Tramways Acts; 1868, c. CLXVII; 1870, c. CLXXVI; 1871, c. CLVII; 1875, c. XLVIII; 1880, c. CXXVI; 1882, c. XCII; 1885, c. CXLV; 1892, c. CXXXIV.
Liverpool Tramways (Purchase) Act, 1872, c. CXXII.
Liverpool United Tramways and Omnibus Company Act, 1879, c. XCVI.
Liverpool Corporation Tramways Act, 1897, c. CIV.
Tramways Orders Confirmation Acts, 1879, c. CXCIII; 1881, c. CV; 1882, c. CXXXVIII; 1883, c. CXXXI; 1884, c. CXII; 1888, c. XCV; 1891, c. CLXII; 1894, c. CLXII; 1898, c. CCIX; 1900, c. CCVIII; 1901, c. CCLXXVII; 1905, c. CXCIII.
Liverpool Corporation Acts, 1900, c. CCXXXVII; 1902, c. CCXL.
Liverpool Corporation (General Powers) Act, 1905, c. CLXXVII.
*London* Street Tramways Acts, 1870, c. CLXXI; 1895.
London Street Tramways (Further Powers) Act, 1873, c. CCXXI.
Metropolitan Tramways Orders Confirmation Act, 1873, c. CCXV.
Tramways Orders Confirmation Act, 1874, c. CLXXXIII.
London Street Tramways (Caledonian Road Extension) Act, 1877, c. CCXIX.
London Street Tramways (Extensions) Acts, 1879, c. CLXXXIX; 1882, c. CLXIII; 1884, c. XCIV; 1885, c. CXV; 1887, c. IV; 1888, c. LXXVIII.
Metropolitan Street Tramways Act, 1869, c. XCIV.
Pimlico, Peckham and Greenwich Street Tramways Acts, 1869, c. XCV; 1870, c. CLXXIV.
Pimlico, Peckham and Greenwich Street Tramways (Extensions) Act, 1870, c. CLXVII.

London Tramways Company (Limited) (Purchase) Act, 1873, c. CCIV.
Southwark and Deptford Tramways Acts, 1879, c. LXXII; 1881, c. CLXXIII; 1889, c. CXLVIII.
South London Tramways Acts, 1879, c. CXCVII; 1881, c. CLXXXIV; 1882, c. CXCII; 1883, c. CLXVII.
South London Tramways (Extensions) Act, 1880, c. XVI.
Peckham and East Dulwich Tramways Acts, 1882, c. CCXIII; 1883, c. CCXXVII; 1885, c. CXCIX; 1887, c. CLXXXIII.
South Eastern Metropolitan Tramways Acts, 1884, c. CXLVII; 1888, c. CLXXXVI; 1900.
Metropolitan Street Tramways Act, 1870, c. CLXXIII.
London Tramways Company (Limited) Various Powers Act, 1888, c. CXLIV.
London Tramways Company (Limited) Acts, 1889, c. CXXIV; 1890, c. XXIV; 1894, c. CXXXII; and 1896.
Lea Bridge, Leyton and Walthamstow Tramways Acts, 1881, c. CLXX; 1884, c. CCXLIV; 1889, c. CLVIII.
London, Deptford and Greenwich Tramways Acts, 1891, c. CLXXIII; 1893, c. CCXII.
North Metropolitan Tramways Acts, 1869, c. CI; 1870, c. CLXXII; 1871, c. CLXXIX; 1873, c. LXXVIII; 1874, c. XLV; 1877; c. CXI; 1880, c. XCVII; 1882, c. CXXXVI; 1884, c. CLXVIII; 1885, c. XXVI; 1887, c. XII; 1888, c. CXXII; 1890, c. XLVI; 1892, c. CLX; and 1897.
Tramways Orders Confirmation Acts, 1879, c. CXCIII; 1880, c. CLXXIII; 1881, c. CLXIV; 1890, c. CLXXXII.
North London Tramways Acts, 1882, c. CXCIV; 1883, c. CXLII; 1884, c. CXCII; 1886, c. XXXIX.
London County Council (Vauxhall Bridge Tramways) Act, 1896, c. CCXI.
London County Council Tramways Acts, 1896, c. LI; 1900, c. CCLXX.
London County Council (Tramways and Improvements) Acts, 1901, c. CCLXXI; 1903, c. CCXIX; 1904, c. CCXXX.
London County Council Tramways (Electrical Powers) Act, 1900, c. CCXXXVIII.
London County Council (Subways and Tramways) Act, 1902, c. CCXVIII.
And many others of less importance.
*London United* Tramways Act, 1898, c. CCLVI; 1899, c. CXCIV; 1900, c. CCLXXI; 1901, c. CLX; 1902, c. CCXLVII; 1903, c. CXCI; 1904, c. CXCVIII; 1905, c. L.
Orders under Light Railways Act, 1898 and 1904.
Metropolitan Orders Confirmation Act, 1873, c. LXXXV.
Metropolitan Tramways Orders Confirmation Act, 1873, c. CCXV.
Tramways Orders Confirmation Acts, 1876, c. CL; 1881, c. CLXIV; 1887, c. CXCVI; 1895, c. C.
West Metropolitan Tramways Acts, 1882, c. CCV; 1889, c. CCII; 1891, c. CXXXII; 1893, c. XLVIII.

*Dublin.* Tramways (Ireland) Acts, 1860, c. 152; 1895, c. 20; 1900, c. 60.
Tramways (Ireland) Amendment Acts, 1861, c. 102; 1871, c. 114; 1881, c. 17; 1801, c. 42.
Dublin Tramways Acts, 1871, c. LXXXVIII; 1873, c. XCI; 1878, c. CXLIX.
North Dublin Street Tramways Acts, 1875, c. CCIX; 1876, c. CCXXXIII; 1880, c. CLXIX.
Dublin Southern District Tramways Acts, 1878, c. CLIX; 1883, c. CCXXXII; 1887, c. XLIV; 1893, c. CCXX; 1898, c. CLVIII.
Dublin Central Tramways Act, 1878, c. CLVIII.
Dublin United Tramways Acts, 1881, c. CXL; 1896, c. CCXXIII; 1905, c. CLXV.
Dublin United Tramways (Electrical Power) Act, 1897, c. CCXXXVI.
Dublin United Tramways (New Lines) Act, 1897, c. CCXXXV.
Blackrock & Yungstown Tramways Act, 1883, c. CIV.
City of Dublin Tramways Order, 1867.
Dublin Tramways Order, 1877.
Dublin United Tramways Extension Order, 1885.
Dublin United Tramways (Junctions and Extensions) Order, 1892.
Dublin United Tramways (Alteration and Deviation) Order, 1892.
Dublin Southern District Order, 1893.
Dublin United Tramways (Construction and Diversions) Order 1895.
Dublin Southern District Tramways Order, 1894.
Dublin United Tramways Company (Extensions and Alterations) Order, 1899.
Dublin United Tramways Company (Extensions of Lines) Order, 1903.
*Norwich.* Electric Tramways Acts, 1897, c. CCLIV; 1898, c. CXXVII.

### A—HISTORICAL AND GENERAL.

A 1. Date when undertaking began to operate.
A 2. Character of original organization, whether individual, firm, corporation, municipal or other form.
A 3. Character of present organization, whether individual, firm, corporation, municipal or other form.
A 4. Date when municipal operation was begun.

| *Towns.* | A1 | A2 | A3 | A4 |
|---|---|---|---|---|
| Glasgow ..... | 1872 | Municipal ownership and company operation. | Municipal. | July 1, 1894 |
| Manchester ..... | 1877 | Municipal ownership and company operation. | Municipal. | June 7, 1901[1] |

[1]The transfer of all lines was not completed until 1903, the system being taken over as rapidly as it could be electrified.

| *Towns.* | A1 | A2 | A3 | A4 |
|---|---|---|---|---|
| Liverpool ..... | (?)1869 | Company ownership and operation. | Municipal. | Sept. 1, 1897 |
| London C. C.[1].... | 1870 | Company ownership and operation. | Municipal. | Jan. 1, 1899[2] |
| London United.. | 1873[3] | Company. | Company. | ..... |
| Dublin ..... | 1872 | Company. | Company. | ..... |
| Norwich ..... | 1900 | Company. | Company. | ..... |

A 5. Give date and character of changes in ownership since origin.

A 6. State method of making each change.

A 7. State terms of each arrangement.

A 8. State fully reasons for each change.

*Glasgow.* In 1870 two rival companies applied to Parliament for powers to operate street railways in Glasgow. The town council opposed both schemes and especially the idea of having competing companies with duplicate lines in the same streets. As a result the two companies were amalgamated and a provision inserted in the bill authorizing the city to lay tracks, provided it decided to do so within six months, and to lease the lines to a private company or to adopt municipal operation. This last provision was probably an oversight, as Parliament strongly opposed the extension of municipal activity in this direction and in the general Tramways Act of the same year, it was expressly stated that power to operate was not thereby conferred upon any municipal authority.

Immediately after the enactment of the bill, the council decided to construct tramway lines rather than permit a private company to do so. A private company leased the lines from the city, agreeing to pay:

(1) The interest on the entire amount borrowed by the city for the construction of tramways;

(2) A sinking fund of three per cent. on the same capital expenditure, which was to be used by the city in writing off capital, so that at the end of the lease the entire indebtedness would be wiped out;

(3) A yearly sum equal to 4 per cent. on cost of construction, which was to form a fund for replacing the track as rapidly as it became worn out;

(4) A mileage rate of £150 per mile per annum;

(5) All expenses incurred by the city in connection with tramways; and

(6) All expenses for the paving and repairing of the roadway between the rails and eighteen inches beyond the outer rail.

[1] This abbreviation is used throughout for the London County Council tramway system south of the Thames, the system examined in this investigation and the only one *operated* by the council during 1904-5.

[2] Since this date, several other lines have been taken over as agreements could be made or as the leases expired.

[3] This is the date when the first line of this system was authorized by Parliament. Operation was not begun for some time thereafter.

The company further agreed:

(7) To limit fares to certain amounts;

(8) To run workmen's cars at half fares, and

(9) To submit to certain fines for violation of agreement.

The lease was to run for twenty-three years, or until July 1, 1894, and it was expected that when lines were constructed, not included within the lease, similar conditions would be agreed to. As a matter of fact, not one of the subsequent leases was so favorable to the city as the above. The agreement of 1879, for example, contained no provision for a sinking fund or a renewal fund, and similar omissions are found in other instances. All were to terminate in 1894.

When the question of leasing new lines came up, the company which had signed the original lease soon perceived that it had an advantage over competitors and the city as well; for, when once a company has secured control of a rather large mileage, a new company cannot offer as good terms as the one already established. The expense of operating a short line is much larger relatively than that of a longer line. The multiplication of independent companies necessitates frequent changing of cars and higher fares; and the travelling public prefers to accept less favorable terms from the established company rather than to introduce competing lines. The Glasgow company soon realized the advantages of its position, and could not be induced to offer as favorable terms as had been inserted in the original lease. These facts do not wholly account for the difference between the first agreement and those of later dates (part being due to the less favorable situation of some of the lines and the shorter terms of the lease), but they are important factors.

There were disagreements upon other points, e. g., where and when new lines were to be constructed. The city was anxious to have the tramways keep pace with the growth of population and to provide every section with adequate transportation facilities. The private company desired large net profits, and unless these could be secured, it did not favor extension. The tendency of the company was said to be unduly conservative, while the municipal authorities were accused of being in advance of traffic. But whether both were wrong or one was right and the other wrong, is not very important here. The essential fact is that disagreement and lack of harmony resulted. There was no open rupture, but there was an absence of that co-operation without which the system of ownership and lease could not be entirely satisfactory.

During the period from 1871 to 1894, the system of ownership and lease was a success both to the city and the company from the financial point of view. The company made all payments promptly, and the city thus was enabled to fulfill all its obligations. During the twenty-three years of the lease, a capital expenditure to the amount of £344,965 was incurred, of which £201,470 was paid off, leaving £143,495 in loans outstanding. The tracks were

kept in repair and were worth more than the remaining indebtedness, according to the judgment of the city officials. Upon renewal of permanent way, £126,900 were spent. Also £63,600 were carried to the "Common Good," an average of £2,766 per year; and the mileage rate, amounting to some £3,000 during each of the last two years, went to the same fund. This had been made possible not by an express provision of the lease, but merely by the method of dealing with the sinking fund. The company was obliged to pay to the city interest on the capital expenditure, but the sinking fund, which accumulated at compound interest, was used to reduce the loans actually outstanding. Thus the city received interest on the gross capital expenditure, but paid interest only on the capital less the accumulated interest on the sinking fund, as is shown by the following summarized account for the year ending May 31, 1894.

Payments by the tramway company to the city:

| | |
|---|---|
| Interest on capital expenditure | £12,466 |
| Mileage rate | 3,070 |
| Sinking fund | 6,725 |
| Renewal fund to meet obligations of company in maintaining lines | 7,456 |
| Allowances for chamberlain's office, etc | 300 |
| Total | £30,017 |

Payments by the city out of the above:

| | |
|---|---|
| Interest | £9,876 |
| Sinking fund | 6,725 |
| Sum repaid to company for maintenance of lines | 7,456 |
| Expenses of chamberlain's office, etc | 300 |
| Common Good | 5,660 |
| Total | £30,017 |

In 1889, five years before the expiration of the leases, negotiations for renewal were opened as agreed in 1887. The city submitted "conditions of let." The company replied that they were too onerous and vague, and made counter propositions. These were not satisfactory to the municipal authorities, and after much correspondence and numerous attempts at conciliation, it became evident that agreement was practically impossible. At this juncture municipal operation was suggested, and in the municipal elections of 1890 and 1891, particularly the latter, public opinion seemed strongly to favor the plan. The following year, the council decided to try the experiment and offered to purchase the plant and equipment of the private company. But again terms could not be agreed upon; and the general opinion is that the company did not take a reasonable stand and that municipalization was necessary.

A big task now confronted the city. Within less than two years a complete plant for operating the street railways had to be provided; barns, stores, workshops and sheds erected; cars built or purchased; horses bought and trained; men employed and taught to handle cars and horses, etc. Yet all this and more was accomplished within the required time. At midnight of Saturday, June 30, 1894, the leases expired, and the company withdrew its cars, horses and men promptly. The following morning at four, the city began operation with all the paraphernalia, even to the shoeing forges, in readiness. The old company began competition by running omnibuses, but even under such disadvantages as the department was working, the contest was very one-sided. The omnibuses disappeared one by one, and the company lost severely. The expense to the city was much heavier than it would have been had an agreement with the company been possible, and a horse-car system was provided just on the eve of the introduction of electric traction.

To comprehend the reasons which led to municipalization, one must go back of 1894 and even of 1889. When the first lease was made in 1871, the operating company which took over the lease from the promoting company proposed to issue stock to the amount of £350,000 when £200,000 was considered a liberal amount for all legitimate purposes. This aroused a storm of opposition, and the amount actually paid was reduced to £315,000; but as the real value of the property handed over to the operating company did not exceed £165,000, the promoters still managed to clear upwards of £150,000 and possibly more. The capital stock of the company was not reduced during the period of the lease, and dividends were paid upon the full amount, often as high as 12 per cent. These facts did not tend to make the public too sympathetic with the attitude of the company when it came to claim that it could not afford to adopt the changes desired.

The disagreements over new leases and new lines came in the seventies and eighties. But in spite of all, the general sentiment within and without the council in 1889 was not in favor of municipal operation, but of a renewal of the lease. However, there were certain matters which the public wanted remedied. The employees of the company had obtained general sympathy because of their small wages, long hours and improper treatment. Upon an average they were required to work about fourteen hours a day and did not receive more than 19s. per week. A deposit of £2 was required to obtain employment. Fines were imposed for reaching their destination if they were too early or too late, for standing too long or not long enough, and for other offenses. Men were discharged for being too prominent at a meeting to consider striking because of these grievances. The town council undertook to intercede for the men, but was told to look after its own affairs.

The service given by the company aroused frequent complaints. The cars were said to be too few in number, not carefully

cleaned and poorly lighted at night. The fares were thought to be too high, especially in view of the dividends that were paid. Consequently the "conditions of let" submitted in 1889 contained provisions to secure these ends.

When it became known that the company would not accept a lease under the conditions named and that the city had been unable to come to an agreement, public sentiment began to run in favor of municipal operation, and many persons who had considered it only as a last resort came to the conclusion that the step must be taken, if the workmen were to get fair treatment, service to be improved, fares lowered and the public interests adequately considered. Financial gain seems to have been given little consideration and was not urged as an argument.

Although originally the lines did not extend beyond the boundaries of the city, a number of suburban routes have been developed since the city began to operate. Through acts of Parliament and agreements with outside local authorities, Glasgow now owns and operates lines in three counties, six burghs and seven other local areas; it rents the lines of one other burgh and has running powers in still another where a private company is operating. Power to build and operate has been given in still others and the lines are under way, but had not been opened for use before the close of the year under review.

Only one outside authority—Clydebank—has the right to purchase the lines within its area. In all others where the lines are owned by Glasgow, the local authority would need to get a special act of Parliament to enable it to acquire the lines. Glasgow gives no special compensation for these rights, except that passengers are to be carried at the same fares as within the city area. The fact that nothing is paid in aid of rates in Glasgow helped to make it easy to reach such an agreement. In Govan, where the lines are owned by the local authority and leased to Glasgow until 1911, a cash rental is paid. The lease of these lines was originally secured by the old tramway company in 1893, and was operated by it even after it ceased to operate in Glasgow. But it was not remunerative by itself, and the company was glad to sell it to Glasgow in 1896.

*Manchester.* The first street railways were authorized by a provisional order in 1875 under the general Tramways Act of 1870. This statute did not permit municipal operation, but it did allow towns to lay the tracks themselves and then lease the system to a private company. Manchester took advantage of this provision upon the ground that it ought to have complete control over its streets and particularly of the surface, that it could thereby supervise private management better than if it allowed a company to build and own the tracks as well as operate cars, and that the city would benefit financially by the rentals it could demand and the lower fares, better service, etc., it could require. The plan had already been tried in other cities, and although not long in operation anywhere, was said to give satisfaction. Upon the other

hand, a neighboring city—Liverpool—had tried private ownership and found it unsatisfactory.

Construction was promptly begun, and early in 1877 part of the system was ready for use for horse cars. A working agreement was entered into with Messrs. Turton & Busby, who leased the Salford tramways and who were planning to build or lease lines in districts just outside of the city of Manchester. Under this agreement Messrs. Turton and Busby were given the exclusive right to use the tracks for 21 years from May 1, 1877, upon payment of 10 per cent. per annum of the cost of construction. The lessors were required to run workmen's cars morning and evening at fares of not more than ½d. per mile; to limit fares for adults to 3d. for a seat inside the car and 2d. outside and for children 1½d. inside and 2d. outside; to obey municipal by-laws relative to speed, headway, stopping places, traffic on tracks, etc.; to carry no freight without special authority; to affix no advertisements except with the consent of the municipality; to use only animal power without consent; and not to assign or sublet the lease without the consent of the municipalty. The city retained the right to prescribe the kind of cars used and to use the lines free for conveying refuse and road materials. Out of the rental of 10 per cent., the city had to pay all of the fixed charges and to maintain the track and paving in proper condition.

Other tramway lines, about 20 miles in length, were authorized by the Provisional Order of 1878. These were leased for twenty-one years from 1879, subject to the same conditions as in the other lease, for an annual payment of from £300 to £450 per mile of single track, to the Manchester Carriage Company Limited, which had succeeded to the rights and powers of Messrs. Turton and Busby, and which later became the Manchester Carriage and Tramways Company. From time to time, other lines were constructed and leased, usually for twenty-one years, so that the agreements terminated not at any one date but at various dates from 1898 to 1902.

The first definite move in the city council towards municipal operation was made February 20, 1895, when a special committee was appointed by a vote of 35 to 10 to consider and report upon the desirability of working by the council, the chairman being one of those who opposed the motion. Eight months later a report was made recommending that powers to operate be secured from Parliament, not so much with the idea that they would actually be exercised but to place the city in a position where it could secure good terms from the company. Without such powers, the city would practically have been at the mercy of the company, the committee contended. At a meeting of the owners and ratepayers held November 15 to secure permission to promote a bill, the recommendation was opposed and voted down.

The next two years were devoted to investigations into various systems in Great Britain, Europe and the United States and to negotiations with the private company. The general feeling at

first, mirrored by the vote of the owners and ratepayers, was that municipal operation was unwise provided satisfactory terms could be secured from the company. The company suggested that the matter be referred to the Board of Trade to determine the rental for a new lease, and later that the leases be extended to 1906 so that all would expire at the same date and so that the company could make extensions and alterations. Both were rejected, the former on the ground that the Board of Trade had nothing to do with the case, and the latter that such a short term would not enable the company to make the needed improvements and that no improvements were definitely promised, especially in the direction of doing away with horse traction.

The principal objective point of the council committee was a betterment of service through the introduction of some form of mechanical traction and the building of new lines. Upon the whole service had been satisfactory, but the council foresaw that it would not continue to be so unless steps were taken to change the method of traction, and the council thought the company was not making sufficient progress in that direction. The fares had been high, but public agitation had resulted in a considerable reduction which had not only benefited the city but the company, so that at the moment there was no complaint on the score. Many of the men worked seventy hours per week, but no movement for city control had grown out of this fact as in Glasgow. Indeed, the principal arguments for municipalization were: (1) The probable improvement in service if the public were considered more than the shareholders; (2) the financial gain by the transfer of the profits from the shareholders to the city treasury (the company had been very prosperous); (3) the wisdom of having all local monopolies in the hands of the people, especially those which had such a close connection with the streets as tramways; and (4) the great social advantages from improved transit facilities, e. g., the relief of congestion of population by making the suburban areas accessible to workingmen through electric traction. In opposition it was urged: (1) That the responsibility and extent of the undertaking were too great for the city council; (2) that the difficulty of unifying a system running through many local areas was insuperable; (3) that the present service was good, the fares low and the financial profit to the city quite satisfactory; and (4) that the experience of other cities did not justify the experiment.

The consideration of the question went on. In the meantime the council committee had repeated its recommendation that power to operate be obtained from Parliament; Parliament also had annulled its standing order against municipal operation; other cities had secured power to operate; the results of such operation, particularly at Glasgow, appeared to be increasingly favorable; and the difficulties of control without operation had seemingly not diminished. Further, Salford had decided to municipalize, and suburban local authorities had expressed a willingness to lease their lines to Manchester if it would operate them upon reasonable terms.

Upon November 18, 1896, the council voted to promote a bill to get power to operate and to use mechanical traction. Upon February 3, 1897, the owners and ratepayers approved and the bill was framed, introduced and passed. In the summer of the following year, by a vote of 68 to 0 the council decided definitely to adopt electricity and to operate the lines itself, and to make agreements with certain outside local authorities for the operation of their lines in connection with the Manchester system. A bill was passed in 1899 conferring the necessary authority to do so.

Upon October 26, 1898, the council also voted unanimously to require the company to sell the lines it owned to the city at the exipration of the twenty-one years from the date of the granting of authority as provided by the Tramways Act of 1870. Not all of the lines had been constructed by the local authorities; certain ones had been owned from the start by the company. As they had been constructed at different times, the dates of purchase varied considerably, ranging from 1898 to 1903 for certain outside lines.

Before passing to describe the events after 1898, it may be well to summarize the financial results of the lease for the period from 1876 to 1896, when the last quinquennial valuation of the property was made. These figures throw some light upon the reasons which led to municipalization. The payments under the leases were:

Tramways Revenue Account.
From 1876 to March 31, 1896.

| | | |
|---|---|---|
| RECEIPTS. | | |
| Rents (less income tax) | £297,629 | |
| Interest | 22,250 | |
| Income tax refunded | 560 | |
| | | £320,439 |
| PAYMENTS. | | |
| Interest | £47,657 | |
| Bank commission | 146 | |
| Sundries | 947 | |
| Ordinary repairs | 6,440 | |
| | | £55,190 |
| Depreciation: | | |
| Amount carried to Depreciation Account | £80,553 | |
| Depreciation incurred on taking over tramways from local boards, being the difference between the city surveyor's valuation and the loan debt | 7,606 | |
| | | 88,159 |
| Liquidation of debt: | | |
| Loans repaid out of revenue | £29,278 | |
| Transfers to sinking fund account | 53,323 | |
| Repaid by local boards | 8,151 | |
| | | 90,752 |
| Transfer to city funds in aid of rates | | 83,860 |
| Bank balances | | 2,478 |
| | | £320,439 |

Tramways Capital Account.

From 1876 to March 31, 1896.

RECEIPTS.

| | | |
|---|---|---|
| Loans received | £159,969 | |
| Stock from Newton Heath | 22 | |
| Balance owing to banks | 11,107 | |
| | | £171,098 |

PAYMENTS.

| | | |
|---|---|---|
| Net payments for Tramways | £124,497 | |
| Net payments in connection with Provisional Order, 1896 | 101 | |
| Temporary loan to paving department | 15,000 | |
| Loans temporarily repaid | 31,500 | |
| | | £171,098 |

Assets and Liabilities.

March 31, 1906.

ASSETS.

| | | |
|---|---|---|
| Quinquennial valuation at end of year | £71,820 | |
| Rent accrued | 800 | |
| Interest accrued | 120 | |
| Temporary loan to paving department | 15,000 | |
| | | £87,740 |

LIABILITIES.

| | | |
|---|---|---|
| Loans on mortgage | £15,290 | |
| Sundry creditors | 2,984 | |
| Balance in bank | 2,917 | |
| Surplus in sinking fund | 66,549 | |
| | | £87,740 |

The total capital outlay from the beginning for all of the lines owned by Manchester upon March 31, 1896, was £156,666. The lines as valued March 31, 1896, stood at £71,820, and the total live assets were £87,740, against which there were real liabilities of £21,191, leaving an apparent profit of £66,549. During the twenty years of operation, all of the loans made by Manchester had been repaid, the lines had been kept in repair, the interest on outstanding loans had been paid, the capital outlay written down from £156,666 to £71,820 and in addition to £83,860 turned over to relieve taxation.

When the city decided to municipalize, the data for the lines owned by the city and leased were:

| *Approximate Mileage.* | *Rental.* | | *Date of Expiration.* |
|---|---|---|---|
| 3 | miles at 10 per cent. of cost | £1,083 | May 1, 1898 |
| 42¼ | miles at £300-£400 per mile | 17,255 | April 27, 1898 |
| 4½ | miles at £300-£400 per mile | 1,334 | April 27, 1898 |
| 3 | miles at £470 per mile | 1,521 | Nov. 1, 1901 |
| 3½ | miles at £350 per mile | 1,241 | July 11, 1902 |
| ¼ | mile at 10 per cent. of cost | 86 | July 11, 1902 |
| 56½ | miles (route mileage, 32½) | £22,520 | |

As stated above, the Parliamentary session of 1899 saw the introduction and passage of an act authorizing Manchester to work lines outside of its area and to make certain agreements. In 1900 another bill was passed extending these powers and confirming certain agreements so that now the city has full power in this direction. Other acts have been passed in late years, and their principal provisions are given in the following pages.

Including those made subsequently, Manchester has entered into agreements with sixteen local authorities. In two cases, Withington and Moss Side, their areas have since been annexed to Manchester. The agreements with Saale and Bucklow for the taking over of the lines in their areas were not executed and traffic not begun before the close of the year covered in this report. With two others—Salford and Ashton—it has been agreed to exchange running powers so that cars from Manchester may run to the center of Salford and Ashton and that cars from each of these towns may run to the center of Manchester. The net profits on each line go to the authority owning or leasing the track upon which they are made.

The other ten agreements—with Failsworth, Droylsden, Gorton, Denton, Levenshulme, Heaton Norris, Audenshaw, Middleton, Stockport and Stretford—were very similar. Briefly summarized, each authority was to buy the lines within its area, to reconstruct them for electric traction, to lease them to Manchester for twenty-one years, to refuse to lease new lines to any other municipality or company and to make no attempt to get powers to work lines itself before end of lease or to assist any other municipality or company to get running powers without the consent of Manchester. Manchester was to equip and maintain the lines on the overhead system, except in Stretford, which might do so itself or require Manchester to do so, and in Middleton and Stockport, which were to provide the equipment; to have power to remove all the equipment it provided at the end of the lease, unless the local authority purchased it by agreement or arbitration; to give an efficient service equal to the present service, or in Stretford as good as given in any other similar district; to charge no higher fares than at present; to pay all local rates and taxes; and to pay a rental sufficient to pay off the capital with interest in twenty-one years, plus the cost of maintaining track and paving, the capital being the amount expended for Parliamentary expenses, purchase of lines from the company, reconstruction and all other expenses connected therewith, including street widenings, except in Audenshaw where only twenty-one twenty-fifths had to be paid, and in Stretford where the payment for equipment was to be 6½ per cent. on cost. In all cases except Stockport, Middleton and Stretford, Manchester was to furnish the current, but in these areas the local authoity was to supply it at a price not to exceed that paid to the lighting department of Manchester by the tramway undertaking. Stockport also retained the right to annul this clause and require Manchester to provide the current, and to run its own cars upon payment of certain amounts.

| | |
|---|---|
| Upon March 31, 1905, the mileage owned by the city was... | 105⅞ |
| Leased but not owned..... | 36⅛ |
| Over which running powers were held..... | 4⅛ |
| Total ..... | 146⅛ |

As stated above, the leases made by the city of Manchester and the private company were not synchronous, but when it had been decided to electrify the system, it was very desirable that the change should be made as quickly as possible, and that reconstruction should begin before the expiration of the leases. After considerable negotiation an agreement was made with the company July 21, 1899, providing that all leases within the city of Manchester should terminate May 31, 1902; that the city should have the right to reconstruct and operate any line before that date, the payment for this privilege being the average net profit of the company per mile of track; that the company should have running powers over all the lines until the agreed date; that the city should pay to the company any deficiency in the actual profit below the agreed profit; and that the city might require the company to work any lines after the agreed date, the remuneration therefor being the difference between the actual profit and the agreed profit per mile. As a matter of fact, the entire system was not worked by the city until 1903, although part was begun in 1901.

When the city and company came to consider the price to be paid for the undertaking, two points of difference developed; one as to the amount to be paid, the other as to the property to be taken. The city, having in mind the electrification of the system, did not wish to take all of the property, for a considerable portion would be of little value for electric traction. The company maintained that if the city purchased a portion of the system it must purchase all and should not have the right of selecting the property it wished or of refusing any portion. A suit was finally brought to settle the question and the courts ultimately decided that under the Act of 1870 a municipality must take all of the property within its area and could exercise no choice. (See *Manchester Carriage and Tramways Company* v. *Manchester Corporation,* 87 L. T., 504, and 19 T. L. R., 439.) The question of the amount to be paid was referred to an arbitrator, but his decision was not satisfactory and an appeal was taken to the courts. The decision given was satisfactory neither to the company nor to the city, and finally an agreement was reached. According to the accounts of the department £263,158 had been paid to the company up to March 31, 1905.

The actual value of the property transferred is unknown. Most of the property was sold soon after the transfer at a big discount, for although of considerable use to a horse car company, it was of little value to any one else or to the city for its electrical system. However, it was fully realized at the time that a large part of the payment was to induce the company to permit reconstruction before the end of the lease and the transfer of the lines to the city before the termination of the grants.

*Liverpool.* An experimental tramway line was laid down outside of Liverpool about 1860. Because of its faulty construction it became a nuisance, and so many complaints were constantly made that the promoters were obliged to abandon the scheme and remove the tracks. A few years later a limited liability company, composed principally of Americans, it is said, was formed, and application made to Parliament for power to construct lines. Two attempts were made, but both were unsuccessful because of the opposition of the city authorities. A third bill was drawn, approved by Liverpool in view of the changes made to meet its views and enacted by Parliament in 1868—the first special act passed relating to tramways in England.

This act provided for private ownership and private operation, for the paving of the street between the tracks and rails and 18 inches beyond by the company, for purchase by the city at its option in 11 years, and for the removal of the tracks in 5 years if they proved to be detrimental to public interests. Similar powers were given to local authorities outside of Liverpool, and the track was kept in such poor condition and became so obstructive to street traffic that one authority did compel the company to remove the tracks. In Liverpool the conditions were even worse and became so bad that in 1872, Parliament gave the city power to acquire in two and one-half years upon three months notice. This did not produce the desired result, and in 1874 Liverpool tried to do what a suburban authority had done and ordered the tracks removed. But the company brought suit and threatened to fight every step in the courts. It became evident that if this were done, conditions would continue as they were for a long time and little would be gained even if the city were successful. Then the company offered to reconstruct its lines, but financial difficulties followed and the company was reorganized. An agreement whereby the city would reconstruct the lines and maintain them at the expense of the company was offered as a solution. But this plan was equally unsatisfactory.

The period of private ownership and operation ended in 1880. The fares were said to be high and the service poor. There were only seven miles of track, and the population of the city was over 400,000. The city paid the company for the system about £30,000, or £4,000 per mile of single track. An agreement was made by which the city was to own and maintain the lines and lease them to the company at a rental of seven and one-half per cent. upon the purchase price of the lines taken over—£30,000. In 1884, a new lease was made for twenty-one years, under which the city was to build, own and maintain and the company to pay a rental of £5,855 for the existing lines and ten per cent. of the cost of new lines, including the expense of paving. Still another lease was made in 1895 and the date of reversion postponed to June 1, 1915.

It was at this time that the agitation for municipal operation came prominently to the fore. The occasion was the apparently

innocent proposition to extend the city boundaries. Very unexpectedly the tramway company opposed the extension because it had lines in the outside areas and did not wish to have them brought within the city limits. In order to withdraw its opposition, the city had to extend its lease ten years; or rather, the Committee of the House of Commons which was considering the measure for the extension of the boundaries said that the company should have a ten year extension or the bill would not go through. This action aroused the city to a realization of how strong a hold the company had upon it and how the company might prevent the normal development of the city unless its demands were satisfied.

Another instance in 1896 made some stir. The company began an action against the city for £80,000 damages for injuries to cars and horses because the lines were in bad condition it claimed. The city denied any responsibility and the case was taken before an arbitrator. In the meantime, the talk about municipal operation increased. Other cities were taking steps in that direction. Glasgow had recently made the change, and the results were apparently quite favorable. The Liverpool service was considered inferior, and the company had been urged by the city to adopt some kind of mechanical traction. The company had replied that it was making experiments but had not reached satisfactory conclusions. I can find no record of any proposal made by the company to adopt electricity if the lease were extended, and certain city officials who were in the council at the time assert that they would have given an extension if it had been asked for and accompanied by a definite proposition for electrification. Apparently the company was fairly prosperous but not enterprising. It treated its employees very harshly, and the working day was from twelve to fifteen hours. The company would do nothing to appease the public demand and finally the policy of municipalization was adopted by a large majority in the council. The vote on the measure November 18, 1896, was 78 to 7 and upon January 13, 1897, 71 to 16.

Financially, the system of municipal ownership and private operation was successful. In the early years of the lease, the payments were hardly sufficient to meet all charges, but towards the end there was annually a considerable sum for the reduction of taxation after paying maintenance charges, depreciation, interest and sinking fund payments.

When purchase was mooted in 1896, the lease had nineteen years to run. If the undertaking were to be acquired, therefore, the terms must be acceptable to the company. As finally agreed and embodied in the Act of 1897, the city paid £567,375 for the assets of the company which consisted of cars, horses, barns, etc., and the rights of working leased lines outside of the city boundaries, plus £46,803 for capital spent by company but not included in share capital. The city also agreed to pay five directors the capitalized value of an annuity equal to the fees they would

have received up to 1915 or death if before, to compensate the auditors and solicitors similarly and to take over all the officers and employees at the salaries and wages they had been receiving. To the solicitors, auditors and directors, the city did actually pay £17,362.

The question naturally arises: How much property did the city get for its £630,000? As the property was taken over without appraisal or inventory, a definite answer cannot be given. The capital of the company on December 31, 1896, was, according to the report of the company:

| | | |
|---|---|---|
| Share capital | £445,000 | |
| Mortgages | 7,500 | |
| | | £452,500 |
| There had been spent in addition on capital account | | [1]13,000 |
| Total | | £465,500 |

According to the company's statement to the shareholders, the capital investment was as follows:

| | |
|---|---|
| Lands, buildings | £191,282 |
| Tramway lines | 17,421 |
| Tramway horses | 86,080 |
| Tramway cars | 53,688 |
| Other plant, etc | 16,186 |
| Total | £364,657 |

If the property were worth this full amount, Liverpool had to pay over £250,000 for the franchise. It is currently stated, and so far as I could learn, without contradiction that the property was not in good condition, that it had run down. The market value of the shares went up very considerably in anticipation of purchase. It seems reasonable to estimate therefore that about 50 per cent. of the purchase price was not represented by tangible assets.

In 1902, the city acquired the system of the Garston and District Tramway Company Limited, which was operating two and one-half miles in an outside area, paying therefor £20,257. This area is now within the municipal boundaries, and the city owns no tracks outside of its own area except about three-quarters of a mile in Litherland. The lines connect with the South Lancashire Tramways Company and through service is run to St. Helens and Preston from Pier Head—the water front of Liverpool. It operates the lines owned by Bootle under an agreement made in 1902, the principal provisions of which are as follows:

The reconstruction of the old horse car lines to be done by Bootle which is also to provide all the overhead and underground electrical equipment, to furnish the current for its own area and that of Litherland, and to maintain and keep in repair all the lines

[1] I imagine the amount here given as £13,000 is an error; £31,000 would more nearly correspond with other figures secured. But the printed copy before me says £13,000.

and equipment it owns. Liverpool has the exclusive right to use the lines for 25 years from April 1, 1900, upon payment of £5,798 for each of the first twelve years and £4,776 for each of the remaining thirteen years, payable quarterly. About eight miles are now leased and in 1905 a rental of £5,858 was paid. It must also pay all taxes and 1½d. per unit for the first 375,000 units used per annum and 1d. for each unit above this amount, and not take less than 600,000 units per annum. In 1905, 1,047,918 units were supplied by Bootle. The fares charged may not exceed the statutory limits for Liverpool (see D 15), and workmen's cars must be run. Liverpool must maintain the rolling stock in good condition and not sublet any part of the lines without the consent of Bootle.

This agreement may be extended by mutual consent or failing agreement upon such terms and for such a period as the Board of Trade may decree. If new lines are built by Bootle with the consent of Liverpool, the rental shall be 9 per cent. per annum on the cost of such additional lines and 1½ per cent. more for electrical equipment.

*London C. C.* Street railways are said to have been first introduced into London in 1857 by an American—Mr. George Francis Train. His application to Parliament in the following year for statutory power to lay tracks was refused, chiefly because of the opposition of Sir Benjamin Hall, then chief commissioner of works. However, in 1861 permission having been obtained from the local authorities, short lines were laid by Mr. Train in Bayswater Road, west from the Marble Arch, in Westminster upon Victoria Street, and in Kennington Road from Westminster Bridge to Kennington Park. These lines provoked a storm of protests, for the rails projected considerably above the surface of the street and not only inconvenienced traffic but caused many accidents. They were even condemned as dangerous to life as well as to property, and popular disapproval was so great that in a short time the tracks were removed, but not until a feeling of opposition to all street railways had become quite general. Thus, when a new tramway line was proposed, it was thought to be an attempt to resurrect Train's schemes and many naturally objected strenuously.

The first acts of Parliament authorizing tramways in London were passed in 1869 and provided for three lines in different parts of the Metropolis, operated by three different companies. The bills as originally drafted provided for the construction of 42 miles of line, but the Metropolitan Board of Works suggested that, as these were the first lines to be legally authorized and something of an experiment, only short lines be permitted and that clauses be inserted to protect public welfare. About 15 route miles were finally sanctioned.

The considerable number of tramway schemes which had been brought forward in the late sixties raised the question of an enactment of a general tramway law, but as Parliament was not ready

to act in 1869, and as it was not considered wise to hold up the bills until a general act should be adopted, they were enacted with the provision inserted that nothing therein should be construed to exempt the companies from the provisions of any general act afterwards passed by Parliament. The acts of 1869 also provided that if the street authority should apply to Parliament any time after twenty-one years from the passing of the acts for power to purchase the undertaking, upon payment of the full value of the tramways, of the works and materials connected therewith, of the lands, buildings and all other property, and of the *goodwill* of the business and its prospective value, to be determined by arbitration in case of disagreement, the company should not oppose municipalization.

The Parliamentary session of 1870 saw the introduction of a general tramways bill and several other bills for the authorization of additional lines in London. All of these bills were being pressed at the same time, but it was very uncertain just what provisions would be incorporated in the general act and just what provisions would therefore become applicable to the London companies. The Metropolitan Board of Works decided to take no chances and to require, as a consideration for the withholding of its opposition to the company bills, the acceptance of clauses giving it the right to acquire the tramway undertakings or parts thereof within its area at the end of 28 years or any subsequent period of 7 years, upon payment of "the then value (exclusive of any allowance for past or future profits of the undertaking, or any compensation for compulsory sale or other consideration whatever)," such value to be determined by arbitration in case of disagreement. These terms—an exchange of an extension of tenure for 7 years for the loss of compensation for goodwill and prospective profits—were accepted, and thus the lines authorized in 1869 became purchasable in 1898.

The other lines authorized in 1870 were made purchasable in 1891, or every 7 years thereafter, upon the same terms as given above—those finally adopted in the Tramways Act of 1870, which also empowered local authorities to build lines but not to operate them. Since 1870 upwards of 100 acts and provisional orders have been passed. Almost without exception, the clauses regarding purchase in the Act of 1870 have been put in force, but in several instances although not always, the term of the grant has been abbreviated to make it coincide with that of other parts of the same system.

The question of municipal ownership and operation came up as far back as 1870, but at the time it was not considered within the proper sphere of municipal activity for a local authority to *operate* tramways; but to *own* lines which were to be leased to a private company to operate was not considered objectionable if local conditions made it advisable. It is true that at that time no public body did own lines, but the insertion of the provision in the general Act of 1870 which permitted municipalities to construct and

own reflects the general sentiment, and several towns soon did build and lease. The Metropolitan Board of Works considered the question for some time and finally decided to leave the field for the present to private companies. The principal reason why it did not build was that the members of the Board were selected by the vestries and local boards, who had control of the streets and who would have been aroused if either directly or indirectly their control had been diminished, and yet this would necessarily follow if the Board constructed lines. Then, too, if public opinion should favor municipalization even at the expense of the local authorities, the lines could be taken over at the end of 21 years. In the meantime let other towns experiment and show whether municipal control would succeed or fail.

The following extract from *The Times* of January 14, 1871, shows the attitude adopted. "At the usual meeting of the Metropolitan Board of Works, held on January 13th, 1871, a report was presented from the Parliamentary Committee on the tramway schemes proposed in the metropolis, which stated that there were two alternatives before the Board. They may either undertake themselves the construction of tramways throughout the metropolis, leasing the lines so constructed to other companies for the purpose of being worked by the latter, or they may authorize the laying down of tramways by other bodies in the first instance. The Committee had considered both these courses. The advantages offered by the first alternative, viz., the construction of tramways by the Board appeared to be twofold: (1) The securing from an expenditure of capital such a return as should suffice, not only to pay the interest on the amount expended, but to afford a surplus by means of which the Board might be able to effect improvements in the metropolis, or to relieve the ratepayers of a portion of their present burdens; and (2) the laying down of tramways upon a more general and comprehensive plan than would be adopted by a number of companies competing one against another. In the first place there would probably be a very strong objection on the part of many to the Board expending the public money on a work of this kind, partaking, as it would to some extent, of the character of a commercial enterprise. It should be borne in mind that the Act contains provisions empowering the Board, at the end of 21 years, and under certain circumstances earlier, to purchase any tramway, paying simply the value of the materials and works (exclusive of any allowance for past or future profits of the undertaking, or any compensation for compulsory sale, or other consideration whatever). It will thus be in the power of the Board, at the end of the period specified, or of any subsequent seven years, to acquire possession of any tramway on the most favorable terms, and they will then have obtained sufficient experience to enable them to decide as to the expediency of purchasing."

Until the abolition of the Board in 1889, this policy was continued. Few conditions were imposed upon companies by the Board, except that the works should be carried out to its satisfaction, and no attempt was made to acquire or work the lines.

The London County Council, which succeeded to the powers of the Metropolitan Board of Works in 1889, was more favorable to municipal operation. It was elected by the voters directly and from the beginning contained a considerable number of men who favored the extension of governmental activity. The first definite action taken was upon March 24, 1891, when the Highways Committee recommended that a special meeting of the Council be held to consider the advisability of serving notice upon the company regarding a portion of the lines becoming purchasable in 1891, that the Council would exercise its rights under the special Act of 1870. According to this Act, at least two-thirds of the Council must be present when the vote is taken, and at two meetings, June 9 and July 14, when the matter was considered, many of those opposed to purchase left the chamber before the vote was taken, thus reducing the number voting below the legal requirement, although in each case the vote was overwhelmingly in favor of municipal purchase. Upon October 27, 1891, the requisite number was secured, and by a vote of 90 to 2 (a bare two-thirds) purchase was decided upon, although not until after an amendment had been passed stating that the Council had no intention of working the lines or of seeking power to do so. This amendment was not taken seriously by many, however, and was commonly accepted as an excuse to enable those who hesitated to vote for purchase. It was recognized that it could have no binding effect whatever.

In due time the approval of the Board of Trade was secured and notice sent to the company, which submitted its claims for compensation. The Council considered them exorbitant and an arbitrator was named by the Board of Trade. The point at issue was the proper basis for appraisal. The Council held that the cost of duplication less depreciation from whatever cause should be the standard and that no allowance whatever should be made for profits, past or prospective, goodwill or as a going concern. The company argued that rental value should be the basis, capitalized at 20 years purchase, with the value of the freeholds and leaseholds added. The arbitrator first decided to receive the evidence offered by the company to show what the value of the line would be upon this basis, and later decided that he could not legally consider it. The company's claim amounting to £604,090 was set aside and a value of £64,540 fixed, upon the basis of what it would cost the Council to replace the portion of the undertaking to be bought less depreciation. The total amount paid, certain items not being the subject of dispute, was £101,798.

Naturally, this decision was not satisfactory to the company, and an appeal was taken to the Queen's Bench Division where the arbitrator's position was declared to be wrong. Then the Council appealed and the Court of Appeal reversed the Queen's Bench Division and upheld the arbitrator. The case was then taken to the House of Lords, with the same result. (See *London Street Tramways Company* v. *London County Council,* 1894, A. C., 489; 63 L. J., Q. B. 769.) A decision was handed down at the same time

in an Edinburgh case on the same point, so that it is now well settled that the basis of appraisal, under the general Act of 1870 as well as the special one at issue in the London case, is the cost of duplication less depreciation.

Although a final decision of the case was not reached until 1894, the Council continued the policy of acquisition as fast as the lines became purchasable. It also decided to give its consent to the granting of new powers to companies only upon certain conditions, which generally were uniformity in the gauge of tramways, use of improved forms of rails as required by the Board of Trade, proper maintenance of rails and road and recovery of penalties in default of such maintenance, suspension of traffic during works of drainage, alteration by the company of the position of tramways if required for the purposes of widening streets, alteration by the company of paving materials in the event of the road authority requiring such alterations, alteration of the position of tramways to allow the erection of rest shelters or other conveniences, authority for the Board of Trade to grant a license for the use of mechanical power other than steam for a period not exceeding one year, and the renewal of such license with the consent to the Council and of the road authority, and finally a proviso that all additions to a line should become purchasable within 21 years after the passing of the original act authorizing that portion of the undertaking and not after the date of any subsequent act authorizing additions to the tramway.

In certain instances, the Council has also endeavored to secure the insertion of clauses providing that every person employed shall not be required to work for a longer time than 10 hours a day, that the company shall not charge increased fares on Sundays or holidays, that the line shall be double throughout the entire length, and that before any portion of the tramway shall be laid any projected street widening in any of the roads affected shall be carried out to the satisfaction of the Council as well as of the road authority.

Generally speaking, the private ownership of new lines has been permitted by the Council only when such lines were part and parcel of an existing system—extensions—and then it has nearly always insisted that the term of the grant of the extension should be terminable at the same time as the main line.

The first line acquired by the London County Council was a short line and a part of a larger system. It was clearly impracticable for the Council to operate it, and it was therefore leased to the private company for a short period. Another short bit was acquired while the case was in the court. The companies found this plan of municipalization by bits quite unsatisfactory and two of them proposed to the Council that all of their lines should be purchased by agreement and leased to them for operation.

While these negotiations were under way, a suit was started to test the Council's power to purchase any *part* of a system before the expiration of 21 years from the date of the latest grant.

The High Court decided that the Council was entitled to purchase any part of a system, when its term expired, and that the period for each part began to run from the date of the act authorizing its construction. An appeal was taken, but the decision was upheld. (See *North Metropolitan Tramways Company* vs. *London County Council,* 59 J. P., 697, and 60 J. P., 23.)

This decision hastened an agreement, and the entire lines of the London Street Tramways Company and the North Metropolitan Tramways Company—about 48 route miles—were transferred to the London County Council, the total cost being £806,087 according to the last report of the Council. The agreement authorizing the sale provided also for the leasing of the lines to the North Metropolitan Company for 14 years from Midsummer, 1896. Under this lease, the company was to pay a fixed rental of £45,000 per year, 5 per cent. per annum on the purchase price of the freehold, 6 per cent. per annum on the purchase price of the leasehold, depots and other premises, and 12½ per cent. per annum of the excess of the gross receipts for the year over the gross receipts for 1895, 8 per cent. on the cost of construction of extensions of lines, 5 per cent. on additional buildings and 6 per cent. on freehold or leasehold property. There were also provisions regarding the hours of labor and wages of employees, workmen's cars, character of service, fares, the adoption of mechanical traction and the maintenance of the track.

Although this lease was not to exipre until midsummer, 1910, the Council decided some time ago that unification of the lines and conversion to electric traction ought not to be delayed until then, and opened negotiations with the company in 1901 for the adoption of electric power. Various difficulties arose, and after repeated conferences between the company, the local authorities and the Council, it became evident that the arrangements for reconstruction would be made much easier if the Council should buy up the lease and begin working at once. An agreement was finally brought about, the transfer made upon April 1, 1906, and reconstruction begun.

The first line becoming purchasable south of the Thames was part of the London Tramway Company's system, 2¼ route miles, in 1895. In 1898 the grant for the bulk of the system fell in, and an agreement was made for the transfer of all of the lines (about 24 route miles) and the property of the company for £876,595. Four other undertakings have also been acquired at various times in 1902, 1904 and 1905, for which the following amounts have been paid, according to the last report of the department:

| | |
|---|---|
| South London Tramways Co. (13¼ route miles)..... | £232,144 |
| South Eastern Metropolitan Co. (2½ route miles).... | 50,167 |
| London, Deptford & Greenwich Co. (6⅝ route miles).. | 96,327 |
| Woolwich & South Eastern Metropolitan Co..... | 49,826 |
| Adding the total amount actually paid to the London Tramways Co. (24⅜ route miles)..... | 882,043 |
| Total..... | £1,310,507 |

The total capital expenditure for the purchase of undertakings, having approximately 100 route miles, and incidental charges was £2,116,594 up to March 31, 1906.

As already stated, the Council leased the tramways north of the Thames to a private company and municipal operation dates only from April 1, 1906. No investigation has therefore been made of this system. The lines south of the Thames have been operated as fast as acquired, beginning January 1, 1899. It was not clear at first that the Council had the right to operate. The general Tramways Act of 1870 expressly stated that no right to operate was conferred thereby, but some dependence was placed at first in the theory that when the Council took over an undertaking or even part thereof, under an act which did not expressly withhold the right to work as the 1870 Act did, the Council acquired not only the mere physical property but the right to operate it as well. This theory was not generally considered as safe and an act of Parliament was obtained in 1896 giving the Council the right to work the lines as well as to own and to lease.

Still the Council had no power to build new lines or to change the traction from animal to electric. The first grant of authority to electrify was made in 1900 following closely upon the decision to operate and the actual working begun in 1899. Power to build specific lines has been given every year from 1900 to date, but all of the requests of the Council have not been granted by any means. In the three years 1900-2 alone, the Council promoted schemes for 95 miles of lines, but only 35 were finally authorized by Parliament, the remaining 60 miles, being vetoed by the local authorities, through whose areas the lines were to run, or by Parliament.

Another serious interference with the proper development of the system has been the refusal to pass a bill to permit widening of the bridges in the central portion of the Metropolis and the laying of tracks thereon. Passengers have been landed at the southern termini of these bridges and must take a bus to reach the other side of the Thames where the business and office district is located. In the early seventies, schemes were drawn up for lines across the bridges, but from then until the last session, Parliament refused to give such powers to companies or public bodies, except over some of the less important bridges. In 1906 a bill was finally passed authorizing the County Council to lay tracks over certain bridges and to widen the present structures to accommodate the traffic.

The Council also has labored under the disadvantage of having no power to run omnibuses across. When the Council purchased the lines of the London Tramways Company, this company was operating omnibuses over three bridges. The tramways department continued the service and extended it to afford greater convenience. This seems to have aroused the hostility of the omnibus proprietors who brought suit to test the Council's right to maintain the service. The lower courts decided that the Council had no legal power to run any omnibuses. The case was then ap-

pealed, finally reaching the House of Lords, and the decision was affirmed. The Council has since tried to obtain power from Parliament, but unsuccessfully up to the end of the year dealt with in this report.

The reasons why the Metropolitan Board did not build tramway lines during its existence have already been given. It only remains to state the factors which led to municipal ownership and operation after the County Council came into being. Several have already been alluded to. In the first place, the Council is elected by the voters directly and is not therefore responsible to the local road authorities as was the Metropolitan Board. It is true that councillors are selected by districts and not at large, but the local feeling is by no means so strong as in the local boards which represent only local sentiment. The creation of this central body—the County Council—thus made possible for the first time an expression of the popular will on large questions which concerned the whole city. Doubtless municipal ownership would have come earlier if the Council had been born sooner, but the Metropolitan Board could not move in that direction without encroaching upon the activities of the bodies to which it was responsible.

The explanation of the popular sentiment in favor of municipal purchase is simple. By 1890, the feeling that the public authorities should have complete and full control over the surface of the streets had grown very strong. The highways belonged to the people; their representatives were responsible for the maintenance of the surface in good condition; how could this be done effectively if private persons were given control over a portion; and why should the public give a private company rights in the public highways which it could not annul whenever it wished? It seemed but natural, they said, that the local authorities themselves should build the tracks, maintain them and thus retain full control over the public highways. This *a priori* line of argument had practical confirmation in the actual operations of certain of the companies. There were many complaints of the bad state of the tracks and the failure to keep up the paving between the rails and 18 inches beyond. Even as far back as 1878 and 1879, committees of the House of Lords and House of Commons reported that it was "desirable, that, wherever, it is possible, tramways should be constructed and maintained, but not worked by the local authority."

The experience of many other towns was cited. It was commonly believed that municipal ownership not only did away with the many disputes which arose between the local authorities and the companies when the tracks were in private hands, but as a financial investment was quite profitable and enabled the public to control to some extent the actions of the tramway companies. Whatever reluctance there may have been at the start to enter an untried field was no longer justifiable, it was said, for many other towns had tried public ownership and were satisfied with the results.

Further, the termination of the grants made it possible to secure the existing lines from time to time at reasonable figures. The companies had made a profit, why should not the County Council? There were no inflated values to be paid, no prospective profits to be allowed and no goodwill to be capitalized.

Another factor was the disorganization and the lack of unification in the tramway systems. From the very beginning there had been a considerable number of lines, operated by separate companies, each intent on its own plans. By 1890 some amalgamation had taken place and a few of the lines had been joined, but there were still thirteen companies with tracks in the County of London. Yet the total route mileage operated by these companies within and without the county was only 130 miles. It was thought that if the Council took hold, purchased existing lines and built others, a comprehensive scheme could ultimately be worked out.

When municipal ownership was voted in 1891, it is probably true that a considerable proportion of the people and of the members of the Council were not believers in public operation. No poll had been taken but possibly a majority could have been found to favor operation by the Council even then; but it was only a theoretical question and not possible practically, for the Council had no power to operate, Parliament had a standing order against the working of tramways by municipalities and the lines that could be acquired were only short bits of much larger systems. By 1898, when the Council acquired a large portion of the mileage south of the Thames, the standing order against municipal operation had been removed, the Council had gotten power to work, and lines out of which a system might be built had been acquired. The way was therefore open if the Council should decide to operate, which it did.

The principal reason in favor of municipal operation seems to have been the lack of adequate tramway facilities. The service taken by itself was not complained of particularly. As horse-car lines they were about the same as found elsewhere. There was some talk about the infrequency of cars and their inferior character, but the principal complaints were that the various lines were run wholly independently, that they were planned without any relation to each other, and that electric traction ought to be introduced. Yet the people thought there was little likelihood that the private companies would remedy these defects in the immediate future. Amalgamation or inter-company agreements promised little; the companies were too independent. Further, they naturally would not build lines where they would not benefit financially, although the lines might add greatly to the adequacy of transportation facilities. With the lines in the hands of one body, it was evident that the service could be unified, that connecting links could be built between the various lines, that cars from one line could be run over others, giving a thorough service, and that lines could be built even though not directly remunerative. The

economies of one management over several would also be considerable.

In this connection some weight was attached to the belief that if the lines were in the hands of a public body, the local road authorities would be less likely to veto the schemes it proposed than if they came from companies, for it was generally recognized that this local veto had hindered considerably the development of a comprehensive scheme in London and unless it were less frequently used under council management, the Council would not be able to carry out its plans for amalgamation and unification, although of course as long as it did not build new lines, it was free to do what it chose with those already in existence. How the local veto has hindered the plans of the County Council we have already seen.

The labor question was also very prominent. The Council had tried to help the employees by inserting conditions in the grants, and improvement had resulted; but there were many matters relating to the treatment of the men which were not foreseen and of course could not be remedied by the Council after the grant had once been made. In other words, the plan of attempting to protect the interests of the employees through conditions in grants was not effective and chiefly because it was not sufficiently flexible and responsive to changing conditions. Apparently the employees had just grounds of complaint, at least the public generally considered them just. The hours were long, the pay small and many minor details annoying.

Then there was also the financial gain which could be used to reduce taxation, to lower fares or to improve the service. It was not the all absorbing topic, but there were many improvements to be made and the expected profits would make it possible to carry them out much sooner than if the tramways were owned by companies and the profits therefrom went into individual hands.

In support of the belief that beneficial results would attend working by the Council, the experience of other cities, particularly Glasgow, was cited. Other cities were operating trams, why should not the County Council? Other cities were said to be getting satisfactory results, why not London?

*London United.* The London United Tramways (1901) Limited is a comparatively new company, having been formed to acquire in 1901 the lines of another company. The origin of the system really dates back to 1873, when the construction of two lines in the West End was authorized by Parliament with the approval of the Metropolitan Board. Again in 1876, another line was authorized, connecting with one of the lines of 1873. These two systems had a route mileage of about 7 and 2½ miles respectively. In 1881 the West Metropolitan Tramways Company was formed and an act passed the following year permitting it to take over these two companies and also granting powers for the construction of new lines, approximating 4 miles in length. Other lines have since been authorized from time to time within and without the County of London.

The next important step was the formation of the London United company in 1894 to acquire and reorganize the West Metropolitan company whose lines had fallen into a condition of decrepitude and were of comparatively little public utility (evidence of Sir J. Clifton Robinson, Managing Director of the present company before the London Traffic Commission). This company in turn was purchased in 1901 by the London United Tramways (1901) Limited—the present company. The payment was £1,650,000, £600,000 being in ordinary shares, £360,000 in preference shares, £450,000 in 4 per cent. debenture stock and £240,000 in cash. The property acquired was not inventoried, but the prospectus issued for the sale of stock in the new company stated that the purchase price of £1,650,000 was for the expenditure "on capital account of the vendor company in and about establishing and acquiring its undertakings and assets," £1,050,000, and goodwill of undertaking, £600,000.

The London United company, like the County Council, has not been able to secure powers to construct all of the lines it has proposed. In the seven years from 1898 to 1904, schemes for over 59 route miles were vetoed by the local authorities. In the same period, powers for upwards of 53 miles were granted.

None of the lines have been taken over by the local authorities. The London County Council is not greatly concerned, for by far the greater part of the mileage lies in the County of Middlesex, the authorities of which have not gone in for municipal operation to the same extent as those in London. There has been some talk of purchase when the rights may be acquired, but nothing definite has been settled. The earliest date when any section may be purchased is 1909, certain of the earliest grants having been renewed, and certain others given for shorter periods than 21 years (see inquiry D 8).

*Dublin.* In May, 1867, a company was given powers to construct tramways in Dublin by an Order in Council under the Irish Tramways Act of 1860. No tracks were laid, however, and it was not until four years later that any company actually began to build lines. This company, the Dublin United Tramways Company, secured authority under an act of Parliament passed in 1871 which empowered them to build 17½ miles. The same year the rights of the old company which had never been used were acquired, and operation was begun in 1872.

The success of this company led to the formation of three other companies: The North Dublin Street Tramways Company in 1875-6 and the Central Tramways Company and the Dublin Southern District Tramways Company in 1878. The latter was outside the area of the city and at first was not a competitor of the others. The competition between the three companies was very keen and finally ended in consolidation upon January 1, 1881, the Dublin United Tramways Company buying up the other two. The company outside the city soon began to lay plans to get into town, which were opposed by the consolidated company, and a

fierce fight went on. Parliament refused to sanction the schemes of the Southern District Company, and in 1896 it was purchased by the United. In 1905 by special act of Parliament, the two companies were consolidated.

These changes were all authorized by acts of Parliament and provided for the issuance of new stock upon the basis of £15 for every £10 sare of the old United company's stock, £9 for every £10 share of the Northern Dublin company's and £12 for every £10 share of the Central company's stock; this in 1881. When the Dublin Southern District Company was purchased in 1896, £243,000 in cash was paid, the road just having been electrically equipped. The result of these various amalgamations was to increase the amount of capital liabilities by £159,229 without any corresponding increase in the tangible assets.

*Norwich.* The Norwich Electric Tramways Company has the newest system included in this investigation. It was incorporated by the Parliamentary Act of 1897 and has powers quite unique, as the following pages will show. Large street improvements had to be carried out to allow tramways to run through the narrow winding lanes of this old city, and the expense was divided between the city and the company, although the work was done by the company.

There has been some talk from time to time about municipal operation, particularly when the grant of powers was before the city for approval. General opinion at that time favored company management in view of the terms of the grant. Under the provisions of the Act, the city cannot purchase except by agreement before 1918.

A 9. Has there ever been municipal ownership and private operation of the system?

*Glasgow.* Yes, from 1873 to 1894. See inquiries A 5-8 above.

*Manchester.* Yes, from 1877 to 1903. See A 5-8 above.

*Liverpool.* Yes, from 1880 to 1897. See A 5-8 above.

*London C. C.* Yes, of the Northern system from 1891 to 1906. The Southern lines were only operated a short time after municipal ownership had been decided upon, or until the legal questions could be decided and the transfer made. See A 5-8 above.

*Companies.* No.

A 10. Is the general sentiment favorable or unfavorable to the present system of ownership and operation?

*Municipalities.* Generally favorable in each case. In Manchester, there are many who question the wisdom of conducting an express service in connection with the tramways, but the general sentiment is quite favorable.

*London United.* There is considerable criticism of the company's methods and attitude towards the public.

*Dublin, Norwich.* Generally favorable.

A 11. What is the attitude of the press?

*Municipalities.* Generally favorable, although in every town there is a portion of the press which opposes municipal trading and which watches the undertaking closely. In London there are newspapers that are more hostile to and that more frequently criticize and oppose the municipal operation of the tramway system than in the other towns. Generally speaking, the "Conservative" papers opposed and the "Liberal" papers support it.

*Companies.* Generally favorable, but the London United Company is criticised somewhat by the purely local papers.

A 12. State current objections to present system.

*Municipalities.* None of importance, except those related to the question of municipal trading generally. There are persons in every town who believe that the local authorities should not operate tramways and frequently give as a reason that the undertaking is not providing a sufficient amount for depreciation, etc. There are others who want large sums set aside to relieve rates, and others who do not want taxation lowered at all but want fares reduced.

*London United.* The criticism most frequently encountered is that the company is arrogant and disregards the wishes of the local authorities and of the travelling public. There is also considerable complaint about the infrequency with which cars are run.

*Dublin.* None of any importance. There was a dispute between the company and the city over the sanding of the track. The case was taken into court and settled, the position of the city being upheld. There have also been complaints about the paving done by the company; but the city itself is not a model in this regard.

*Norwich.* The only ones found were that sufficient cars were not run when there were unusual crowds, that they were not well distributed at times and that covered-top cars should be supplied.

A 13. Do the citizens take an active interest in the management of the system?

*Municipalities.* Yes, especially in all matters which affect service and rates of fare. All important moves are observed and discussed.

*Companies.* All matters relating to service and rates of fare attract wide notice, but as company business is conducted privately, plans and proposals do not receive the same notice nor arouse as much interest as in the case of public plants.

A 14. Have there ever been competing street railway companies in the city?

*Glasgow, Liverpool, Manchester.* No, but there are and have been for years steam railroads which run out in several directions. These do a large suburban business and compete with certain of the tramway lines for traffic. In Glasgow there is also a subway, but the service is not very good and it feeds a limited district.

*London C. C.* As explained under inquiries A 5-8 above, there were many separate lines and companies in London. Of course, in a way, they were competing companies, but as each tapped a different area, and as few persons could select between two or more lines when making a trip, there was not genuine and active competition. Now there are the deep level subways, steam roads and omnibus lines which compete to a certain extent. The Southern system does not include quite all of the lines south of the Thames in the County of London, but nearly all.

*London United.* No, except the indirect competition of lines in nearby districts, of the steam roads and of omnibuses.

*Dublin.* Yes, up to 1881. The companies to a certain extent supplied the same areas, but generally speaking they ran in different directions. Such competition as there was consisted principally of a struggle to occupy new streets before their competitors, to give better and cheaper service, and to stimulate the growth of population in their areas rather than in others. The steam roads have always been competitors for suburban traffic to a certain extent.

*Norwich.* No, and the town is too small for the tramways to feel any competition of steam roads.

A 15. Are there competing companies now?

No, except the indirect competition spoken of above. The tramway lines in each instance have been consolidated into a single system, except in the Southern system in London, where there are a few miles south of the Thames not belonging to the County Council.

A 16. If private companies have consolidated, give dates and methods briefly.

See under inquiries A 5-8.

A 17. Give population of city at last national census, 1901.

A 18. Give estimated population January 1, 1906, of the areas in which lines may be operated.

| *Undertakings.* | *A* 17. | *A* 18. |
|---|---|---|
| Glasgow | 760,423 | [1]1,050,000 |
| Manchester | 543,872 | [2]900,000 |
| Liverpool | 684,958 | [3]837,000 |
| London C. C. | (?) | [4]1,100,000 |
| London United | (?) | [5]400,000 |
| Dublin | 290,638 | [6]500,000 |
| Norwich | 111,733 | [7]117,000 |

**B—GENERAL FINANCIAL POWERS OF MUNICIPALITIES.**

B 1. Does city have power, for construction or acquisition of tramways, to raise money by issuing securities?

*Glasgow, Manchester, Liverpool.* Yes, but each new issue of securities must be authorized by Parliament either by special act or provisional order.

*London C. C.* This body obtains its powers of raising money for capital expenditure for all purposes by means of an annual Money Act passed by Parliament. This act confers power to raise money by the issue of stock and temporarily by bills or temporary loans. It prescribes the conditions under which money may be raised and the provisions for repayment of debt, limiting the amount which may be expended for each purpose within the finan-

[1] The department also has running powers over one route mile of tramways in Paisley—a burgh of 87,000 population west of Glasgow. The lines in this area are operated by a company. The areas outside of Glasgow in which the city is operating tramways have a population of about 260,000, but in many of these areas only a part of the population is within reach of the tramways, as some of them are very sparsely settled. The figures here given are for the whole of all the areas, no matter if the lines only run through one part of the district.

[2] The department has powers in ten outside areas, having an estimated population of about 270,000 people, but in several cases the rights have only recently been secured and only for short or connecting lines. As in the case of Glasgow, the figures here given include the population of the whole of all the areas, even though the people are not on the tramway lines. The purpose of the department has been to connect Manchester with the other towns at some distance. One of the areas in which Manchester has a short line for this purpose, has a population itself of nearly 100,000 and a tramway system of its own. Manchester also exchanges running powers with two other local authorities, the population of which is not included here.

[3] The estimated population of Liverpool alone is 760,000. The department operates lines outside of its area in Bootle and Litherland which have estimated populations of 63,000 and 14,000 respectively.

[4] This estimate of the population of the areas reached by the London County Council system is only a rough approximation. It is all within the County of London.

[5] This estimate is only approximate.

[6] The areas outside of Dublin in which the company is operating have an estimated population of 180,000.

[7] The company has no lines outside of Norwich.

cial period covered by each act. The financial period is a period of 18 months, comprising the financial year from April 1 to March 31, and the following six months ending September 30. The powers of expenditure conferred for "the following six months" are tentative powers only, and are superseded by the powers conferred for the year by the following Money Act. This is necessary because the financial year ends on March 31, and the act which confers the power for the next year is not passed by Parliament until July or August.

B 2. Does the city have power, for construction or acquisition of tramways, to raise money by taxation?

The Tramways Act of 1870 provides that a local authority shall pay all expenses incurred in securing a provisional order and carrying it into effect or of purchasing a tramway system from a private company out of the local rate (local taxation); and if such rate be insufficient because of the limit imposed by law, the Board of Trade may extend the limit by a provisional order. (For borrowing powers, see inquiry D 22.) Naturally, it is not customary to raise money for capital purposes by taxation, but the local authorities may do so. No municipality has obtained additional powers in this regard by special enactment.

B 3. Does the city have power to raise money by taxation to meet a deficit? If so, what statutory limit is fixed?

*Glasgow.* City has no such power. The "Common Good" may be called upon to make up a deficit.

*Manchester, Liverpool, London C. C.* See B 2 above. When the rates are mortgaged to secure the payment of the interest and principal of the outstanding liabilities, as the cities may do generally, the taxing power may be utilized to make good any deficit in this direction.

B 4. State fully, step by step, the procedure which must be followed and the requirements which must be met before the city may construct or acquire a plant; also source of each provision, whether state constitution, statute or ordinance. Note particularly requirements as to initiation of proposal, special action by the city authorities before its adoption, mayoralty veto, referendum, publicity, making of appropriations, bond issues and approval of scheme by courts or state authorities.

See inquiry B 5 under Gas. The summary there given applies here. A more complete discussion is given in the special report on franchise legislation.

### C—INCORPORATION OF COMPANIES.

C 1. Date of incorporation of present company.

London United, 1901; Dublin, 1896; Norwich, 1897.

C 2. Place of incorporation.

London in each case, except the Dublin United company, which was incorporated in Dublin.

C 3. Was incorporation under general law, special act, administrative order or other method?

*London United, Dublin.* General Companies Acts, 1862-1900, which provide a general routine for the incorporation of any company.

*Norwich.* By a special act of Parliament, 1897.

C 4. For what length of time was incorporation to be effective?

As no limit was fixed in any act, it is in perpetuity, or until the company is wound up voluntarily or by act of Parliament.

C 5. If this duration has since been extended or decreased, state when, how, or for what period of time, and reasons therefor.

No change has been made in any case.

C 6. Was the power of amendment or alteration reserved to the state?

No power to amend or annul was expressly reserved, but Parliament has the power to do either at any time.

**D—PUBLIC SUPERVISION OF MUNICIPALITIES AND COMPANIES.**

D 1. Does municipality or company have power to condemn private plants under the right of eminent domain?

There is no general "right of eminent domain." Property may not be acquired otherwise than by agreement, except under authority of Parliament given by private act or provisional order, and when powers of "compulsory purchase" are so conferred, Parliament amply protects vested rights. This is true of cities and companies alike.

D 2. Does municipality or company have power to purchase private plants?

*Municipalities.* There are no private tramway systems in any municipality here dealt with, except London; the conditions of purchase there are given under D 8. No tramway system may be purchased by agreement by a local authority unless the transfer shall have been approved by the Board of Trade and unless the resolution authorizing the purchase shall have been adopted at a special meeting of the local authority, held after one month's notice, at which two-thirds of the members vote and a majority of those voting approve (Trmways Act, 1870).

*Companies.* There are no competing tramway systems in Dublin or Norwich, but there are in the areas adjacent to the London United. But no company may buy lines belonging to another company without the approval of the Board of Trade. The statutory provisions regarding the purchase of the present systems by the local authorities are given under D 8.

D 3. Does the municipality or company have power to construct works upon its own property?

The same rule applies here as in electric lighting; see, therefore, inquiry D 3 in the Schedule upon Electric Lighting.

D 4. Does the municipality or company have power to lay tracks in the streets?

Each undertaking has been given authority by Parliament to lay tracks in certain streets, the exact locations being specified in detail. No municipality or company has been given general power to construct lines, and each new project, no matter if it invokes only a "crossover" of a few yards in length, must be sanctioned by Parliament through a special act or provisional order, except in certain cases where power to substitute double for single track has been given. The conditions attending the use of these powers are given in the following pages.

D 5. Does the municipality or company have full powers of operation?

Yes, generally speaking; but there is a tendency to withhold from municipalities some of the powers that are freely given to companies; see the experience of the London County Council given under A 5-8.

D 6. How were these powers conferred?

By general laws, special acts and provisional orders. See lists under Sources.

D 7. Explain system of taxation fully, including all payments to central and local authorities, fees, special assessments, etc.

See special report on this subject.

D 8. Give statutory provisions regarding purchase of plants by public authorities.

*Municipalities.* The undertakings are already in the hands of the public authorities except about fifteen route miles in the County of London, operated by private companies. These may all be acquired by the London County Council upon the terms of the Act of 1870 or at "going value" (see under *Companies* below for explanation of these terms) by 1909.

*Glasgow* and Liverpool are the only cities that own tracks outside of their own areas. Of all the local authorities in whose areas Glasgow is operating, only one—Clydebank—has reserved the right to purchase the lines in its area at any specified date, and here the provisions of the Act of 1870 apply. The other local authorities may purchase only by agreement or after having secured the passage of a special act of Parliament giving them authority—a step which Parliament would be very slow to take. The leased lines and those over which running powers are held, of course do not belong to Glasgow but to outside authorities or companies.

*Manchester* also operates lines in a dozen different districts, but it owns tracks in none of them. In all but four it has provided the electrical equipment to operate the lines on the overhead system, and at the end of the leases (21 years from date of signature), it must remove this equipment unless the local authorities purchase it by agreement or arbitration. (In this connection, see what is

said about Manchester under inquiry D 8, Electric Lighting Schedules.)

*Liverpool* owns a line in Litherland of three-fourths of a mile, which may be purchased, according to an act of 1897, seven years from that date and every three years thereafter, under the terms of the general law given below. In return for the reconstruction of the line, Litherland has signed an agreement not to exercise its option to buy before April 1, 1922. The lines operated in Bootle belong to that borough and are leased to Liverpool (see A 5-8).

*Companies.* I. The Tramways Act of 1870, which applies to all of Great Britain unless an exception is expressly made by a special act of Parliament, provides that local authorities may jointly or separately acquire the tramways of a private company at the expiration of twenty-one years from the issuance of the act or provisional order authorizing the construction of the line, or at the expiration of any subsequent period of seven years. The Act also prescribes the procedure which must be followed. The resolution must be passed at a special meeting of the members of the local authority, whether it be a city council, an urban district council, a local board, a vestry or the road trustees, held within six months after the expiration of the period; a month's notice of this meeting must be given and the purpose stated in the notice; two-thirds of the members must be present and vote, and a majority of these must concur in the resolution (an exception is made for the Scottish road trustees). The purchase is not valid without the approval of the Board of Trade. Notice must be served in writing upon the owners requiring them to sell.

II. The compensation is stated to be "the then value (exclusive of any allowance for past or future profits of the undertaking, or any compensation for compulsory sale, or other consideration whatsoever) * * * such value to be in case of difference determined by an engineer or other fit person nominated as referee by the Board of Trade on the application of either party, and the expenses of the reference to be borne and paid as the referee directs." In interpreting these words, the courts have held that no question of rental value may be considered in determining the purchase price, because rental value is based upon past profits and probable future profits, and that the amount to be paid is what it would cost at the date of the sale to construct the tramway lines as they stand, subject to a proper deduction in respect of depreciation, but with no allowance for the rights, powers and privileges of the promoters. (See discussion in Robertson, pp. 181-9.)

III. The property taken shall include "all lands, buildings, works, materials and plant of the promoters suitable to and used by them for the purposes of the undertaking within such district" and "all the rights, powers and authorities of such promoters in respect to the undertaking sold," which "shall be transferred to, vested in, and may be exercised by the authority to whom the same has been sold." It is to be noted that the local authority is not authorized or required to take over the whole of the undertaking

if it is not situated wholly within its area, but only the part that is within its jurisdiction. Upon the other hand, an authority may not purchase the lines beyond its area unless acting jointly with another authority. The courts have held (see the Manchester decision cited under A 5-8) that the purchasing authority must take all the lands, buildings, materials and plant of the company, if it takes all the lines, rights and powers, although they may be to some extent useless to the purchasers in view of the intended electrification of the system. It has also been decided (see decision quoted under A 5-8, *London C. C.* and others cited in Robertson, pp. 181-9) that the periods of purchase run for each section separately from the date of authorization. Consequently, if a system was built under acts passed at different dates, the right of purchase is exercisable 21 years, and every seven thereafter, from the date of each grant; so unless an agreement is reached it may not be taken over as a whole, but only by piecemeal.

IV. The above paragraphs, I-III, provide for the acquisition of tramways by compulsory purchase at certain periods. There are four other ways of securing control: Purchase by agreement, acquisition in case of insolvency or of discontinuance of operation, and purchase by special act. The Act of 1870 provides that when a line has been operated for six months, it may be sold to any one or to the local authority of the district with the approval of the Board of Trade. As the local authority cannot compel a sale in this case, it is implied that the terms must be mutually agreed upon. The sale includes the transfer of all rights and property as set forth in paragraph III above, so that the local authority is completely substituted for the company. The procedure to be followed in passing a resolution for purchase is the same as stated in paragraph I.

V. The initial step in the case of suspected insolvency is to be taken by a local authority. If it makes a representation to the Board of Trade that the company is insolvent and therefore unable to work its lines with advantage to the public, the Board may make an inquiry through a referee; and if the referee reports that the company is insolvent, the Board may terminate the powers of the company six months hence. At this point the local authority may step in and purchase the undertaking as provided in paragraphs I-III, remove the tracks from the streets and charge the costs to the company.

VI. The procedure in the case of discontinuance of operation is as follows: If a company ceases to operate its system or any part thereof for three months, the Board of Trade may annul its powers, so far as they relate to the lines discontinued, unless the company is not responsible for the discontinuance. When this is done, the local authority may purchase the lines affected, as provided in paragraphs I-III, or remove them at the expense of the company, when permission has been obtained from the Board of Trade.

VII. The only other way by which a municipality may take over an undertaking is by a special act of Parliament granting such

authority and specifying the terms. This method is more theoretical than practical, for Parliament does not pass such a law unless the company is willing to sell or unless it has been guilty of gross mismanagement and has utterly disregarded the interests of the public.

VIII. The Light Railways Act of 1896, under which street railways are sometimes constructed, does not contain any provisions relative to purchase by local authorities; it leaves this matter to be dealt with in the order issued by the Light Railway Commissioners for each case.

IX. We come now to the three companies dealt with in this schedule, and unless noted to the contrary, the provisions of the Act of 1870 apply in every regard:

*London United.* The two essential points in which the acts and orders governing this company have modified the general law are the periods of purchase and the price to be paid, but the changes made are by no means uniform in respect to either. Different sections have been authorized at various times, and as the lines run through the areas of many local authorities, the terms demanded by these authorities naturally have varied from place to place and from time to time. The periods of the grants have varied from 7 to 30 years, usually 21, 25 and 30. The price to be paid has vacillated between the terms of the Act of 1870 and "the fair market value thereof as a going concern, but without any allowance for compulsory purchase, such value to be, in case of difference, determined by an engineer or other fit person nominated as referee by the Board of Trade on the application of either party."

When the present company was formed in 1901, the prospectus then issued stated that the local authorities had an option of purchasing the 50½ route miles, existing or authorized, of the vendor company at various times, approximately as follows, dating from Midsummer, 1901:

| | | | | |
|---|---|---|---|---|
| 17 | miles | for | 25 | years, |
| 24 | " | " | 23 | " |
| 5¼ | " | " | 18 | " |
| 4¼ | " | " | 8 | " |

50½ miles for 22 years nearly on the average.

It also stated that in respect of about 30 miles, the price to be paid would be the market value as a going concern and for about 20 miles the value as fixed by the 1870 Act.

Since 1901, upwards of 30 route miles of lines have been authorized, but not all had been opened before the end of 1905. In the London *Stock Exchange Official Intelligence* for 1906, it is stated that 53¾ route miles are purchasable as "a going concern" and 24 miles under the Act of 1870, and that the average period of purchase was 20½ years from February, 1906. If no new lines had been authorized since 1901, the average would have been about 17½, but as the new lines were for 25 and 30 years principally, the average was brought up.

The earliest date when any line may be acquired is 1909. This does not mean that the powers granted in the seventies were for 30 years and over, but rather than certain of the earlier grants have been extended since they were originally made. One of the latest grants expires as early as any, for a short length of track purchasable in 1909 was authorized in 1902. Indeed, the policy of several of the local authorities has been to make the grants synchronous in their areas, and for this reason they have given extensions or approved grants for short periods, as 7 or 14 years.

*Dublin.* The Tramways Act of 1870 and the Light Railways Act of 1896 do not apply to Ireland, the tramways in Irish cities being built under Orders in Council, special acts or the general laws cited under *Sources.* The provisions regarding acquisition by municipalities of the Dublin system are to be found in the various special acts that have been passed. Those relating to insolvency and cessation of operation are the same as those in the 1870 Act, and in the main the statements made above concerning purchase by agreement and under special act apply here. The clauses dealing with compulsory purchase differ in several important points from those given above.

The first act under which tracks were laid, that of 1871, authorized the local authority to purchase the lines in 11 years, the price therefor to be fixed by agreement or failing agreement by arbitration, but not to include any allowance for good will, compulsory purchase, etc. To the value thus obtained, 30 per cent. was to be added, and this sum was to be the compensation for the transfer of all rights, privileges and property. This principle was followed in the acts of the next few years, but one of the acts of 1878 copied the provisions of the general Tramways Act of 1870 for Great Britain. The Act of 1880 did likewise and fixed a period of 10 years for certain lines. But all of these provisions were superseded by the Act of 1897 which authorized the conversion of the system to electricity. It provides that the road authority in each area may purchase and operate the existing undertaking and all tramway lines erected or to be erected in its district, within six months from 40 years from December 31, 1898, and from any seven years thereafter, the terms to be those of the Tramways Act of 1870 plus 30 per cent. of the then value.

*Norwich.* The general Act of 1870 applies with the following amendments: The earliest date when the city may acquire is 1911, 14 years from the passage of the act in 1897 creating the company and giving it power to build a tramway in Norwich. The price to be paid is the then value as a going concern, subject to the right of purchase in 50 years from 1897, plus an amount equal to three times the average net annual profits of the preceding five years, and plus an amount equal to two-fifths of the cost of new streets and street widenings (such two-fifths not to exceed £44,000), less the sum which would have accumulated as a sinking fund at 3 per cent. interest sufficient to pay it off in 50 years. The city may also purchase in 21 years from 1897 or at the end of any succeed-

ing period of seven years by paying an amount arrived at in the same way, minus the sum for three times the average net profits for five years. Fifty years from 1897 or every 7 years thereafter, the city may purchase upon the terms of the 1870 Act.

D 9. Give statutory provisions regarding condemnation of private plants by the city under power of eminent domain.

No such general right in English law, as explained under D 1.

D 10. Give statutory provisions regarding size and location of plant.

The land that may be used for generating station, sheds, etc., is ordinarily specified in the acts but not always. Of course land may not be acquired otherwise than by agreement without express authorization by Parliament, and it is customary to limit the time within which it may be taken to a few years, two or three ordinarily. (See in this connection inquiry D 3 in the Electric Lighting Schedule.) The character and location of the track and structures in the street are very carefully specified in the statutes (see D 4 and 12).

D 11. Give statutory provisions regarding area to be served. (See also A 17 and 18.)

As already stated, neither companies nor local authorities have been given roving powers to locate lines wherever they please; specific authority must be obtained for every bit of track laid.

POPULATION OF AREAS AND MILEAGE.[1]

| *Undertakings.* | *Total Population.* | *Pop. of Borough.* | *Pop. Without.* | *Mileage Owned Within.* | *Mileage Owned Without.* | *Mileage Leased Without.* |
|---|---|---|---|---|---|---|
| Glasgow ..... | 1,050,000 | 790,000 | 260,000 | 96.4 | 41. | 10.2 |
| Manchester .... | 900,000 | 630,000 | 270,000 | 106 | .... | 36.15 |
| Liverpool ..... | 837,000 | 760,000 | 77,000 | 100¼ | 9.2 | (?) |
| London C. C.[2].. | 1,100,000 | ..... | ..... | .... | .... | .... |
| London United[3] | 400,000 | ..... | ..... | .... | .... | .... |
| Dublin ..... | 500,000 | 320,000 | 180,000 | 51.98 | 43.25 | 6.71 |
| Norwich ..... | 117,000 | 117,000 | ..... | 19.26 | .... | .... |

D 12. Give statutory provisions regarding nature of plant and equipment.

The most important provisions are as follows:

I. The Act of 1870 provides that every tramway in a town shall be placed in the middle of the street as nearly as possible and that no track shall be authorized by provisional order to be laid

[1] The population figures are all estimated, but are probably very nearly accurate, except possibly in the case of the London C. C. and the London United. In no case do they indicate the number of people who use the lines or may do so without inconvenience, for the population of all of every district is included, no matter if the lines in it run through only one part of it and do not serve the entire area.

[2] The lines of the London County Council run through many districts, but are within the County of London.

[3] The London United Company has lines in many districts in the counties of London, Middlesex and Surrey.

less than 9 feet 6 inches from the curb for a distance of 30 feet or upwards if one-third of the owners or occupiers of the property abutting on the street where the space is less than 9 feet 6 inches shall object. This clause has not generally been set aside by special acts, but a few exceptions have been made in nearly every town, especially in London and Norwich, where the streets are so narrow. In some instances, notably in the acts of the London United Company, the authority has been given to narrow the sidewalk to get the required 9 feet 6 inches, or the company has been called upon to widen the street to get the necessary space. In Dublin, the company has generally been required to construct passing places or crossovers in such cases.

II. As to the gauge of the tracks, the Act of 1870 provides that if no width is specified in the special act, it shall be 4 feet 8½ inches—the gauge fixed in 1846 for railways generally. Although various gauges were adopted in the earlier acts, especially in those towns where there were independent companies, as in London and Dublin, at present the standard size in all the undertakings, except three, is 4 feet 8½ inches. In Glasgow it is 4 feet 7¾ inches, in Dublin 5 feet 3 inches, and in Norwich 3 feet 6 inches. All statutes require that the rails shall be approved by the Board of Trade and shall be laid and maintained so that the uppermost surface shall be on a level with the surface of the road. Generally, the maximum width of the car is limited to 11 inches beyond the outer edge of the wheel on each side, but the narrower gauges are allowed more overhang.

III. The paving requirements vary considerably. The Act of 1870 requires the undertakers, whether companies or municipalities, at their own expense to pave, repair and maintain, with such materials and in such manner as the road authority shall direct and to their satisfaction, the portion of the roadway between the tracks, unless more than four feet apart, between the rails and 18 inches beyond. If the undertakers do not comply, the road authority after due notice may perform the necessary work and collect the expense from them. If a line is abandoned and the track removed, the roadway must be replaced and repaved. The conditions applicable to the various undertakings are:

*Municipalities.* The above provisions apply in the area of the city itself, in the areas outside and where the road authority is an entirely different body from that having control of the tramways.

*London United.* The above provisions are the normal requirements, but many of the local authorities through whose areas the lines run have exacted additional or supplementary provisions. The most common is the clause stating that the company shall pave and repair the whole of the roadway when the rails are within three feet of the curb; but the amount of work necessitated thereby is not large, for it only adds a strip 18 inches wide and the number of places where the rails are so close is limited, as will be seen by referring to paragraph I above. In several districts, the company may be required to use granite or hard wood laid on concrete and

grouted, but these provisions do not necessarily add to the requirements of the general statute, for according to the latter the paving must be of such materials and must be done in such manner as the road authority may direct, under which wood, granite, asphalt or brick could be insisted upon. There are, however, several instances in which an additional burden has been definitely imposed. For example, the Act of 1904 requires that the company shall pave the roadway with wood for 50 feet on each side of the tracks in front of all places of public worship, schools and public buildings along the route. Few of the streets if any are 115 feet wide or over, so that means practically that the company has to pave the whole of the street in front of these buildings. According to another act, wood paving must be laid on certain lines in front of all schools and buildings used for public meetings habitually, and ten yards on either side of the road frontage of the property; 7 yards in still another case. In another area, the company must pave the whole of a street with wood for a short distance. In another small area, the distance to be paved beyond the rails is 2 feet instead of 18 inches. In another, the entire width of the street for certain blocks shall be paved with granite blocks.

*Dublin.* The provisions generally applicable are similar to those of the Act of 1870, except that the materials to be used may be the same as those used on the rest of the road. In addition, under the Act of 1878, the Central company was required to pave the entire width of two streets, and one foot further beyond the rails, making 2½ feet in all. In 1897, when electric traction and new lines were authorized, the company was made to agree to pave and maintain the whole of one street for a certain distance, to use wood or asphalt and to pave 30 feet or both sides in front of the Academy of Music, all hospitals and all churches past which cars run on certain lines.

*Norwich.* The same clauses that are in the Act of 1870 are in force, except that where the rails are within 3 feet of the curb, the company shall pave the whole of the roadway, and that if the company defaults and the city has to perform the work, 5 per cent. shall be added to the cost and paid to the city. The length of the street which the company must repair because of this provision is about one mile.

IV. The power to open streets for the purpose of laying or repairing tramways is subject to certain restrictions under the general law. For example, due notice must be given to the road authority, the work must be done under its supervision, the length that may be torn up at any one time is limited, openings must be properly watched and guarded and the surface must be restored promptly; but all of these clauses apply alike to the companies and the municipalities so far as practicable.

It is also customary invariably to fix a time limit within which the lines authorized must be completed and opened for traffic. The law of 1870 enacts that the work must be begun within one year and finished within two, but the statute was drawn up when only

horse cars were known, and since then the period for completion has been lengthened. At present a five year period is common for work of any considerable magnitude and in a few instances, e. g., lines for the London United company and the London C. C., seven years have been allowed. The general principle is to fix a period commensurate with the work to be done, a short period for a small job and a long period for a big scheme involving street widenings, etc., but always sufficient time to complete the work.

The penalty for default contained in the 1870 Act is that the powers in relation to the uncompleted work shall cease, unless the time be prolonged by the Board of Trade, and likewise those relating to the work performed unless the Board shall otherwise direct. If they are not thus renewed, the lines shall be considered as discontinued lines and treated as provided in paragraph VI and D 8 above. This part of the penalty is to prevent a company from allowing part of its powers to lapse in its own interest while completing the part of the scheme which is the most profitable. It not infrequently happens that a local authority gives its consent to certain proposals only when and because certain other works are to be carried out. If there were nothing to prevent, a company might neglect to execute this part of the scheme and thus evade the obligations while securing the privileges it sought. As it is, this can not be done unless the Board of Trade permits it.

These provisions apply to all schemes built under provisional orders but do not apply to those authorized by special act unless incorporated therein. The acts of the London United company have almost without exception provided different penalties. In several, particularly the earlier ones, the powers are to cease for the work uncompleted at the end of the period, and no further provision is made, which leaves it possible for the company to drop any part of a scheme and carry out the rest if it wishes to do so. In the later acts, an additional section is inserted which imposes a fine of £50 for each day that work remains uncompleted. These two provisions seem a little incongruous, for the powers cease if not completed, and yet there is a fine of £50 per day for each day of non-completion. Evidently it is intended that the cessation of powers shall apply when no work has been begun on that line or that section, and that the fine shall apply where work is under way but not finished and open for use. This is intimated from the disposition to be made of the fines, viz., for the compensation of any land owner or other person whose property may have been interfered with or rendered less valuable by the non-completion of the work, and of the road authority for any expense made necessary by the default, the balance, if there be any after the payment of all claims, to be repaid to the company.

The Norwich company was required, in addition to loss of powers for uncompleted work, to pay £10,000 to the city unless it shall have made substantial progress within eighteen months with the construction of new streets and street widenings, the Board of Trade to be the judge of whether substantial progress had been made.

V. The Act of 1870 left the special act to provide what motive power might be used, but stated that if nothing was said, only animal power should be adopted. As a matter of fact, all of the undertakings have now been authorized to use the overhead trolley, except the London C. C., which is required to use the conduit system. In some instances, cable or steam traction have been authorized, as for example on certain of the London and Liverpool lines. The statutes have delegated to the Board of Trade the power to issue regulations regarding the use of mechanical traction, and consequently few provisions relating thereto are to be found in the acts. Those almost universally in force require that all reasonable precautions must be used to avoid fusion or electrolytic action, that insulated returns or uninsulated metallic returns of low resistance be adopted, and that snow removed from the tracks may be put to one side of the street temporarily and then taken away entirely. Certain others of a similar character also apply alike to companies and municipalities.

VI. Besides the above, every undertaking is governed by certain exceptional statutory provisions. It is unnecessary to give these in detail, for they are hardly of sufficient importance from the viewpoint of this investigation to warrant it. But in the case of the London United company, the number is unusual and the most important should be cited, for the local authorities have insisted upon many and varying clauses before giving their approval to schemes. On the Kingston lines, the cars are required to be of the best modern type and to be maintained in efficient condition. The conduit system must be used for certain distances within the County of London, the overhead trolley upon the remainder. In each of two districts, a waiting room is required at one point. Advertisements may not be placed upon the poles in a considerable number of districts. In a few the law has gone so far as to enact the following or similar provisions:

"Every rail from end to end to be solidly bedded on concrete.

Fish-plates to be of Bessemer steel seventeen inches in length, three and three-quarter inches wide by half an inch in thickness.

Tie-rods to be formed of two inches by half inch flat bar iron with screw end nuts and washers.

The bolts and nuts to be best rivet iron.

The points shall be of the best quality of crucible cast steel six inches deep with bolt holes drilled and not cored out.

The crossings shall be of steel constructed from the rails.

Wrought-iron or steel fish-plates, bed-plate and angle-pieces with the necessary bolts, nuts, washers and rivets are to be provided and fixed suitable for each angle.

The concrete shall be composed of three parts of clean approved ballast, two parts of good sharp sand and one part of Portland cement mixed on a platform with the proper quantities of water laid six inches thick.

The surface of the concrete shall be screeded with cement and sand (three to one) to the proper contour of the roadway so as to receive the rails and wood blocks evenly.

The spaces intervening between the wood blocks and the web of the rails to be filled in with cement and sand mixed three to one."

The recent acts do not go so far, but leave more to the Board of Trade and the option of the company.

VII. In addition to all these provisions, certain of the central departments at London and the local authorities have been given powers through which they may determine the character of the plant and equipment. The reader should see in this connection therefore the data given under injuiries D 44 and 46; also inquiries D 16 and 27 for matter closely linked with this subject.

D 13. Give statutory provisions regarding extensions of lines.

No extension may be built except with the express authorization of Parliament or the Light Railway Commissioners under the Light Railway Act (see D 4 above).

D 14. Give statutory provisions regarding improvements and new processes.

None, except those cited under D 44 and 46, and the following:

*London United.* Upon certain lines, after appeal from the local authorities, the Board of Trade may require the company to adopt such improvements as it considers wise for "the greater security of the public and advantage of the ordinary traffic."

*Dublin.* Under a few acts passed over 20 years ago, the Board of Trade was empowered to require one company to adopt such improvements as it may direct. This clause is in none of the recent acts and its present application is open to question. Probably it applies if at all only to those few lines authorized in these acts.

*Norwich.* The Act of 1897 provides that on appeal from the company or the city, the Board of Trade shall appoint an arbitrator to decide whether storage batteries or accumulators are advisable,, and that if he reports that they are, the company shall introduce them provided they will allow a profit of not less than 5 per cent. on the capital.

D 15. Give stautory provisions regarding fares and transfers.

I. There are no statutory provisions whatever regarding transfers. The nearest approach to a transfer mentioned in any act is the return-trip tricket for workingmen mentioned below.

II. The general statutes do not fix the rates of fare or charges which an undertaking may levy for the conveyance of persons or things, but a list of the maximum tolls is given in each act or order. Practically all provide that no higher rates shall be charged upon Sundays and holidays than at other times. Passengers are allowed to carry luggage usually up to 28 lbs. in weight free. The maximum fare is ordinarily fixed at 1d. per mile or fraction thereof, and the company or municipality is left to apportion the lines into stages as it chooses, subject to this limitation. The following special provisions apply:

*Glasgow.* All charges shall be the same outside of the city area as within, except where only running powers are held.

*Manchester.* The city may charge 2d. for any distance less than two miles. Certain of the old company acts allowed a minimum fare of 3d.

*Liverpool.* Apparently the limits given in the acts of the old company are still in force. These fixed the maximum fares for each section or route, allowing a higher rate for seats inside the car than outside. The lowest rate was 1d. and increased with the distance, being about 1d. per mile. The acts of recent years have contained a clause stating that charges must be reasonable.

*London C. C.* The acts of the private companies are still in force. The maximum rate is usually 1d. per mile, with the power to charge 3d. for less than 3 miles or 2d. for less than 2 miles. These limits have been extended to the new lines built by the County Council.

*London United.* The acts of this company almost always fix the limit for each section and route, usually so that the fare for each section may not be more than 1d. But a route may have more than one section and in several instances the maximum is 2d. Upon the average the limits are about 1d. per mile. Children under 2 years of age are free if they do not occupy a seat to the exclusion of others.

*Dublin.* The first act allowed the original company to charge 3d. for 3 miles or less and 1d. per mile for any additional distance. This section was copied in other early acts and is still in force. The North Dublin company was permitted to charge 2d. per mile with a minimum fare of 3d. The Southern District and the Central Companies were limited to 2d. per mile for first class and 1½d. per mile for second class—the general limits in the Act of 1860. Some of the most recent acts have reduced these limits. For example, the fare from Nelson's Pillar to Sandymount or Donnybrook may not exceed 2d.

*Norwich.* The general rules apply—1d. per mile, etc.

III. The limits for workmen's fares are usually one-half the ordinary fares. The special clauses in each case are:

*Glasgow.* For the use of workingmen, at least two cars must be run each way on every line, every morning before 7 and every evening after 6, Sundays and certain holidays excepted, at fares not exceeding ½d. per mile with a minimum of 1d. If complaint is made to the Board of Trade that proper service is not given, it may fix the hours of running cars.

Since 1902 no special workmen's cars have been run, for in that year all fares were reduced to the workmen's scale.

*Manchester, Liverpool.* A proper and efficient service of workmen's cars must be run, Sundays and certain holidays excepted, every morning before 8 and every evening after 5, except upon Saturdays, when they shall be run from 12 to 2 P. M. instead of after 5, at fares not to exceed ½d. per mile, with a minimum of 1d. If complaint is made to the Board of Trade of the service given, the Board may regulate it from time to time.

*London C. C.* Same provisions as in Glasgow generally, but hours vary, different standards having been adopted in the different acts. In certain cases, appeal has been allowed to the Board of Trade.

*London United.* The acts are not uniform, except that nearly all require workmen's cars to be run at certain hours, upon which the fares charged must be about one-half of the usual fares. The clause most generally in force requires the company to run a proper and efficient service at such hours, not later than 8 A. M. nor earlier than 5 P. M. (12 to 2 P. M. on Saturdays) as will be most convenient for workingmen, at fares not to exceed ½d. per mile, Sundays and certain holidays excepted. If complaint is made that a proper service is not being maintained, the Board of Trade may order such service established as it thinks reasonable. The penalty for violation is £5 per day. The hours vary in certain districts, and in some the company must give a round-trip ticket for one fare, the return stub being good upon any car after a certain hour or at any time. The acts are not construed to mean that a fare less than 1d. shall be charged, for there are no half-penny fares on the system.

*Dublin.* Workmen's cars must be run on certain routes before 7 A. M. and after 6 P. M., except Sundays and certain holidays, at fares not to exceed ½d. per mile.

*Norwich.* Same as Glasgow, except that the periods are before 8 A. M., after 5:30 P. M. and between 1 and 2 P. M. upon every day but Sundays and certain holidays. If complaint is made to the Board of Trade of the times at which these cars are run, the Board may fix and regulate from time to time.

IV. The charges for carrying merchandise are also regulated by statute. The Irish Tramways Act of 1860 contains a most elaborate schedule of maximum rates for all sorts of "goods." Apparently it was thought at that time that tramways would be used very widely for the transportation of merchandise in large quantities, but such has not been the case. However, all undertakings are limited to some extent by their special acts. The general statutes for British cities contain no maximum rates.

*Glasgow.* Charges may not exceed:

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| For any parcel not over | 7 | lbs | ..... | 3d. |
| " " " | " 7 | " | but less than | 14 | lbs | ..... | 5d. |
| " " " | " 14 | " | " | " | 28 | " | ..... | 7d. |
| " " " | " 28 | " | " | " | 56 | " | ..... | 9d. |
| " " " | " 56 | " | " | " | 500 | " | ..... | no limit. |

The city may not carry goods, etc., other than passengers' personal luggage within the County of Renfrew without the consent of the local authority.

*Manchester.* The following scale of maximum charges appears in most of the acts passed prior to municipalization and is still in force, not having been repealed:

ANIMALS.

| | *Per Mile.* s. | d. |
|---|---|---|
| "For every horse, mule, or other beast of draught or burden.... | 0 | 3 |
| For every ox, cow, bull, or head of cattle..... | 0 | 3 |
| For calves, pigs, sheep, and small animals..... | 0 | 2 |

GOODS AND MINERALS.

| | | |
|---|---|---|
| For all coals, culm, cannel, limestone, chalk, lime, slates, clay, ironstone, undressed or scabbled stones for building, pitching, and paving, slag, stone, salt, sand, cinders, and all undressed materials for repair of public roads, per ton..... | 0 | 3 |
| For all iron, pig iron, bar iron, rod iron, sheet iron, hoop iron, plates of iron, slabs, billets, and rolled iron, wrought iron, not otherwise specifically classed herein, and for heavy iron castings (including railway chairs), tiles, bricks, coke, charcoal, dung, manure, and compost, per ton..... | 0 | 4 |
| For all timber, or wood, per ton..... | 0 | 4 |
| For all sugar, grain, corn, flour, hides, dyewoods, earthenware, staves, deals, and metals (except iron), nails, anvils, vices, and chains, and for light iron castings, per ton..... | 0 | 5 |
| For all cotton and other wools, drugs, manufactured goods, and all other wares, merchandise, fish, articles, matters, or things, per ton ..... | 0 | 6 |
| For every carriage of whatever description..... | 1 | 0 |

SMALL PARCELS.

[Same as charges under Glasgow practically.]

SINGLE ARTICLES OF GREAT WEIGHT.

| | | |
|---|---|---|
| For any boiler, cylinder, or single piece of machinery or single piece of timber or stone, or other single article, the weight of which, including the carriage, exceeds four tons but does not exceed eight tons, per ton..... | 3 | 0 |
| For any single piece of timber, stone, machinery, or other single article, the weight of which, with the carriage, exceeds eight tons, the person or persons conveying the same under the provisions of this Order may demand and take such sum as they or he think fit. | | |

REGULATIONS AS TO TOLLS.

In respect of animals, goods, and minerals conveyed for any less distance than three miles, tolls and charges may be demanded and taken as for three miles."

[Here follow rules about distances less than one mile, fractions of a ton, weighing of lumber and definition of "parcels."]

*Liverpool.* The maximum charges fixed by the company acts, but still in force apparently, are:

ANIMALS.

| | *Any Distance.* s. | d. |
|---|---|---|
| "For every horse, mule, or beast of draught or burden..... | 0 | 6 |
| For every ox, cow, bull, or head of cattle..... | 0 | 6 |
| For every calf, pig, sheep, or other small animal..... | 0 | 3 |

GOODS AND MINERALS.

| | *Any Distance.* s. d. |
|---|---|
| For all coals, coke, culm, charcoal, cannel, limestone, chalk, lime, salt, sand, fireclay, cinders, dung, compost, and all sorts of manure, and all undressed materials for the repair of public roads or highways, per ton | 0 3 |
| For all iron, iron ore, pig iron, bar iron, rod iron, sheet iron, hoop iron, plates of iron, slabs, billets, and rolled iron, bricks, slag, and stone, stones for building, pitching, and paving, tiles, slates, and clay (except fireclay), and for wrought iron, not otherwise specifically classed herein, and for heavy iron castings (including railway chairs), per ton | 0 3 |
| For all sugar, grain, corn, flour, hides, dyewoods, earthenware, timber, staves, deals, and metals (except iron), nails, anvils, vices, and chains, and for light iron castings, per ton | 0 4 |
| For cotton and other wools, drugs, and manufactured goods, and all other wares, merchandise, fish, articles, matters, or things, per ton | 0 4 |
| For every carriage of whatever description not weighing more than one ton, tenpence; and the additional sum of twopence for every additional quarter of a ton above one ton. | |

SINGLE ARTICLES OF GREAT WEIGHT.

| | |
|---|---|
| For the carriage of any iron boiler, cylinder, or single piece of machinery, or single piece of timber or stone, or other single article, the weight of which, including the carriage, shall not exceed four tons, per ton | 0 8 |
| For the carriage of any single piece of timber, stone, machinery, or other single article, the weight of which with the carriage shall exceed four tons, such sum as the person or persons conveying the same may think fit. | |

PARCELS.

[Same as Glasgow and Manchester, practically.]

REGULATIONS AS TO TOLLS.

[Here follow rules regarding fractions of a ton, weighing and charges for lumber.] "

*London United.* (See Act of 1881).

*Dublin.* The limits imposed by the general Act of 1860, as amended in 1881, are very voluminous, the principal ones being:

GOODS.

* * * * * * * * * * *

(Class 1.)

For dung, and all sorts of Manure, Chalk, and all undressed materials for the repair of roads or highways:
For all coals, coke, culm, ironstone, and iron ore:
For all charcoal, limestone, stones for building, pitching, and paving, bricks, tiles, slates, clay, and sand:
For all iron, lead, tin, and tin plates (except nails, utensils, or other articles of merchandise):
Not exceeding for the use of the tramway threepence per ton per mile:
If conveyed in carriages provided by the owners of the tramway, an additional sum per ton per mile not exceeding one eighth of a penny:
If drawn or propelled by power provided by the owners of the tramway,

a further sum per ton per mile not exceeding three eighths of a penny.

(Class 2.)

For all other goods, wares, merchandise, articles, matters, or things (except carriages, herein-after otherwise provided for), not exceeding for the use of the tramway twopence per ton per mile.

If conveyed in carriages provided by the owners of the tramway, a further sum per ton per mile, not exceeding one halfpenny:

If drawn or propelled by power provided by the owners of the tramway, a further sum per ton per mile not exceeding one halfpenny.

(Class 3.)

* * * * * * * * * * *

ANIMALS.

V. The tolls to be taken by the owners of the tramway in respect of animals conveyed in carriages on the tramway shall be—

(Class 4.)

For every horse, mule, ass, or other beast of draught or burden, ox, cow, bull, or head of neat cattle, conveyed in or upon any such carriage, not exceeding for the use of the tramway threepence per mile: * * *

(Class 5.)

For every pig, calf, sheep, lamb, or other small animal conveyed in or upon any such carriage, not exceeding for the use of the tramway one penny per mile: * * *

VI. The maximum rate of charge to be made by the owners of the tramway for the conveyance of animals, articles, matters, or things respectively included in the classes before-mentioned, including the tolls for the use of the tramway, and of carriages, and cost of moving power, and every other expense connected with such conveyance, shall not exceed the amounts following:

For the matters mentioned in Class 1, not exceeding threepence per ton per mile;

For the matters mention in Class 2, not exceeding threepence per ton per mile;

For any carriage mentioned in Class 3, not weighing more than one ton, not exceeding tenpence per mile, and if weighing more than one ton, not exceeding twopence per mile for every quarter of a ton, or fractional part of a quarter of a ton additional:

For everything mentioned in Class 4, not exceeding sixpence per mile:

For everything mentioned in Class 5, not exceeding threepence farthing per mile:

Provided always, that it shall be lawful for the owners of the tramway to demand and take, in addition to the tolls and rates of charge hereinbefore authorized, a reasonable sum for the delivery and collection of goods and other services incidental to the business of a carrier where such services respectively shall be performed by the owners of the tramway otherwise than on the premises of the tramway.

VII. The following provisions and regulations shall be applicable to the calculation of the tolls:

[Rules as to minimum distances, fractions of a mile, fractions of a ton and weighing of lumber.]

VIII. With respect to small parcels and single articles of great weight, the owners of the tramway may lawfully demand for the carriage thereof on the whole or any part of the line the tolls following:"

| | |
|---|---|
| For any parcel not exceeding 7 lbs | 6d. |
| For any parcel over 7 but less than 14 lbs | 9d. |
| For any parcel over 14 but less than 28 lbs | 1s. |
| For any parcel over 28 but less than 56 lbs | 1s. 6d. |
| For any parcel over 56 but less than 500 lbs | No limit. |

*Norwich.* Same as Glasgow.

V. The power to alter or revise these maximum rates for passengers or goods is generally reserved to Parliament by the incorporation in the grant of powers of a clause which declares that nothing in the grant shall be construed to exempt the undertaking from the provisions of any general act or from any future revision or alteration under the authority of Parliament of the maximum rates of charge. Of course, Parliament could amend regardless of the existence of any such clause, but vested rights are so highly respected and carefully guarded by that body that unless the power of revision is expressly reserved, Parliament will not exercise its power, except in very unusual cases. As a matter of fact, I have been unable to find a case where a revision of the rates has been made either by Parliament, or by the Board of Trade as provided in the following paragraphs. The powers of the Board of Trade in the undertakings under examination are:

*Glasgow.* None.

*Manchester.* The following provision was in force when the old company was operating the lines and presumably is in force still generally: If twenty ratepayers or the company appeal to the Board of Trade urging that the fares and charges be revised, the Board of Trade may make an inquiry through a referee appointed by it, and if he report advising a revision, the Board may fix a new scale of tolls. Revisions may not be made less than three years apart, and the fares or charges may not exceed those stated above as the maximum.

*Liverpool, London C. C.* Similar provisions with very slight changes appear in the acts of the old companies here, and as the powers, rights and duties have been taken over by the local authorities, they are still in force.

*Dublin.* The clause given as applicable to Manchester is in force here, except that the local authority may also appeal, and except that not all of the acts contain the clause.

*Norwich.* The Manchester clause, plus the right of the local authority to appeal, applies to the entire system.

D 16. Give statutory provisions regarding character and quality of service—method of traction, kind of cars, speed, headway, etc.

There are few provisions in the acts which directly prescribe what the service shall be, but there are many which indirectly affect it; and as to many other important matters, the Board of Trade and the local authorities have jurisdiction. One should refer, therefore, in this connection to inquiries D 12, 14, 15, 44 and 46.

Every act practically requires the company or the municipality to keep its track in good repair and to assume the responsibility for any injury to life or property which the operation of the system may cause. In case a local authority or twenty ratepayers represent to the Board of Trade that the highway is not being kept up, it may order an inquiry, and in some cases it may simply re-

port its findings to be used as evidence in a suit, and in others it may order the default remedied and impose a fine. Generally, but not in all cases, the undertaking is required to remove the snow from its tracks, but this would be done when necessary as a matter of course. It is not permissible to place it at one side of the road, except temporarily, in most cases. "Trailers" may not be used in two districts through which the London United company runs except in cases of emergency. Upon one line—the Kew Road—cars may not be run oftener than once in three minutes and none from midnight to 7 A. M. without the consent of the local authority. In one district the headway is specified and fixed at one car every ten minutes from 8 A. M. to 8 P. M. Upon certain lines, if the company does not provide such service as may be reasonably required in the public interests, the company is liable to a fine of £5 per day, the question of what service should be supplied to be decided by the Board of Trade upon application from the company, the local authority or not less than 20 ratepayers.

D 17. Is there any authority not connected with the municipality itself which examines the character of the service?

No, except persons appointed by the Board of Trade to investigate and report upon the matters over which it has jurisdiction, or the officers of the local authorities who inspect to see whether the track and paving are being kept in good condition.

D 18. Are the results of such examination published?

Not regularly, only in special cases.

D 19. Give statutory provisions regarding performance of public work by contract or direct employment. None.

D 20. Give statutory provisions regarding letting of contracts.

See answer to inquiry D 20 under Gas.

D 21. Give statutory provisions regarding issuance of stock.

*Municipalities* do not issue dividend-bearing stock—share capital, as it is called in England.

*London United.* No statutory provisions except in the general acts relating to companies. The amount of share capital may be increased or decreased as the company wills through its articles of association. There are no auction clauses or sliding scale provisions as in the case of gas companies.

*Dublin.* As stated under inquiries A 5-8, the present company is the outgrowth of the amalgamation of several companies, which resulted in the increase of stock to the extent of £159,229 without any increase in the tangible assets. The last large increase authorized by Parliament was in 1897—£400,000 to electrify the system. Not all of this was issued, and by Act of 1905 the share capital of the company was limited to £1,200,000. This amount may not be increased without authority from Parliament.

*Norwich.* Amount limited to £264,000 by act of Parliament and may not be changed except in the same way.

D 22. Give statutory provisions regarding issuance of bonds (loan capital). See also D 25.

*Municipalities.* The Act of 1870 empowers local authorities to borrow upon the credit of the local rates—the taxing power—and to mortgage the rates, provided the sum borrowed shall not exceed the amount sanctioned by the Board of Trade, and provided the duration of the loan be not greater than 30 years (see D 25 below). The orders or acts usually confer also the power to mortgage the undertaking as well as the rates. The payment of principal and interest may be enforced by the appointment of a receiver or judicial factor.

*Glasgow.* Loans to the amount of £2,700,000 have been authorized, £1,400,000 by acts of Parliament and £1,300,000 under provisional orders. The security for these loans is the tramway undertaking, its revenues, and the property and income of the "Common Good"; there is no power to fall back upon the rates. If any part is paid off by means other than the sinking fund, it may be reborrowed.

*Manchester.* Since the origin of the undertaking, power to raise capital by loans has been given by special acts of Parliament and by provisional orders under the Act of 1870. Since 1897 when public operation was decided upon, loans to the amount of £1,925,000 have been authorized up to the end of 1904-5. The security is the undertaking, its revenues and the local rate. It should be noted that as current is purchased from the electric lighting department, no capital has been authorized or raised for electric power stations, etc. In Glasgow, the tramway department has its own power stations.

*Liverpool.* Conditions are similar to those in Manchester. Since purchase by the city £1,370,000 in loans have been authorized.

*London C. C.* The London County Council obtains its powers of raising money for capital expenditure for all purposes by means of an annual Money Act passed by Parliament. This act confers power to raise money by the issue of stock and temporarily by bills or temporary loans. It prescribes the conditions under which money may be raised and the provisions for repayment of debt, limiting the amount which may be expended for each purpose within the financial period covered by each act. The financial period is a period of 18 months, comprising the financial year from April 1 to March 31, and the following 6 months ending September 30. The powers of expenditure conferred for "the following six months" are tentative powers only, and are superseded by the powers conferred for the year by the following Money Act. This is necessary because the financial year ends on March 31, and the act which confers the power for the next year is not passed by Parliament until July or August.

All money raised has to be repaid within periods approved by the Treasury, not exceeding 60 years. There are no further limitations upon the amount of debt which the Council may incur, but

each year the matters come under the review of Parliament when the annual Money Bill comes up for consideration, and the Council is required to present with the bill a series of tables giving particulars (*inter alia*) of the debt of the Council.

*London United.* No statutory provisions except those in the general acts relating to all companies, which are of no importance here. There is no limit to the amount that may be issued. Mortgages shall not be a charge upon the undertaking when taken over by the municipality.

*Dublin.* Ditto. The amounts were limited in the early acts, but are not at present.

*Norwich.* The amount to be raised by mortgages is restricted to one-fourth of the paid-up capital stock. They shall not be a charge upon the undertaking if purchased by the city.

D 23. Give statutory provisions regarding use of income or any portion thereof.

*Municipalities.* The Act of 1870 provides that when all charges shall have been paid, the amount remaining shall be applied to the purposes for which the local rate may be applied.

*Glasgow.* The above is not applicable here; none may be used to relieve taxation directly. Borrowed moneys must be used to pay costs, charges and expenses of obtaining Parliamentary authority, purchase of lands, construction of works, and then general purposes, but not for purposes to which revenue should be applicable.

*Manchester.* Receipts must be used in the following order: (1) To pay working expenses and rents; (2) to pay interest and sinking fund payments; (3) to provide, if it is thought fit, a reserve fund by investments in securities to meet deficiencies or extraordinary claims; (4) to put to the credit of the local rate so much as may not be needed, in the opinion of the council, for carrying on the undertaking.

*Liverpool.* Receipts must be used, according to the Act of 1897: (1) To maintain tracks and paving in good repair; (2) to pay working expenses and all items properly chargeable to revenue; (3) to pay interest; (4) to pay sinking fund charges; (5) to provide a reserve or renewal fund or a suspense account, or for the extension or development of the undertaking, or to add to the sinking fund; but until 1912, no surplus shall be paid to the credit of the rates. In 1902, the last clause was amended so as to authorize the transfer of net profits in excess of £30,000 to the relief of rates, provided the amount in any one year shall not exceed one-third of the net profits.

*London C. C.* Profits over and above all charges may go to the reserve or general county fund.

*Companies.* None.

D 24. Give statutory provisions regarding depreciation.

None in any case, but see answers to D 23 and 25.

D 25. Give statutory provisions regarding sinking funds.

*Municipalities.* The Act of 1870 provides for loans upon certain conditions. One of them, as stated above under D 22, is that the loan shall be repaid within 30 years. It further requires that the period of repayment shall be approved by the Board of Trade and that the method of repayment shall be by equal annual installments or by setting aside annually as a sinking fund such a sum as will be sufficient, including the interest thereon when invested in government securities, to pay off the loan within the time specified. The periods usually sanctioned by the Board of Trade are: Permanent way and buildings, not over 30 years; electrical equipment, not over 20 years; cars, not over 15 years. Sometimes an equated period for the whole amount is fixed.

All loans made under the Local Loans Act, 1875, must be repaid within the time specified (a) by annuity certificates for the period, (b) by the payment of a certain number of debentures every year, equal annual installments, (c) by the annual appropriation of a fixed sum, or (d) by a sinking fund. Where the last method is in operation, such yearly or half-yearly sums shall be set aside and accumulated at compound interest as will be sufficient to pay off within the prescribed period the whole of the loan. The funds shall be invested under the direction of the Local Government Board in such securities as trustees may invest in or in securities issued under this act. If any part is invested in the securities of the local authority or is applied to paying off any part of the loan before it is due, the interest thereon shall be paid into the fund. The local authority must make a return to the Local Government Board within twenty-one days from the end of the year showing the amount invested, the amount applied, the character of the investments, etc. If it appears that the local authority has not complied with the law, the Board may direct that the amount in default be raised, invested or applied, as the case may be.

*Glasgow.* In lieu of the first paragraph above, the city is required to set aside not less than 2 per cent. of the amount borrowed, less sinking fund, as upon May 31, 1905, to be accumulated with interest at not less than 3 per cent. until it equals the amount borrowed and unpaid. Prior to the passage of this act in 1905, each authorization had been accompanied with specific conditions as to the period of repayment and sinking funds.

*Manchester.* The terms of the loans authorized by the special acts and provisional orders relating to the old horse car lines were either fixed by Parliament in the acts or by the Board of Trade. All but a very small amount have now been repaid. The recent acts regarding the present system have contained clauses of which those of the Act of 1904 are typical. They fix the limit of the loan for construction of the lines then approved at 30 years, for costs and expenses of the act at 5 years, and for other purposes such a period as the Board of Trade may determine under the 1870 Act not to exceed 50 years. The last two clauses are practically

the same in all of the acts, but the first varies, the period being 40 years in three acts and 50 years in one for street widenings.

*Liverpool.* The periods for repayment have always been fixed by statute or referred to the Board of Trade, the most of them having been for 30 years. The period of the loan for the purchase of the undertaking of the private company was 30 years and for reconstruction, extensions, etc., 25 years.

*London C. C.* All money raised by the Council has to be repaid within periods approved by the Treasury, not exceeding in any case 60 years. The periods adopted with regard to tramways expenditure are as follows: For purchase of undertakings (excluding horses, rolling stock and other short-lived equipment) and for land and buildings, 60 years; for horses and rolling stock for horse traction and for reconstruction of lines for electric traction, equipment of machinery, etc., 25 years.

*Companies.* No requirements in any instance.

D 26. Give statutory provisions regarding profits and dividends.

*Municipalities.* There are no limits, except as stated under inquiries D 23.

*London United, Norwich.* None.

*Dublin.* None, except that dividends may be paid only out of earnings.

D 27. Give statutory provisions regarding compensation for franchises.

In a sense all of the restrictions and limitations under which the companies are operating are in compensation for the franchises they hold, but the inquiry evidently has reference rather to the direct payments or equivalents in service rendered to local authorities.

*Municipalities.* This inquiry is applicable only to those cases where the city is operating in areas outside of its boundaries, as in Glasgow, Manchester and Liverpool, or where the road authority is separate and distinct from the tramway authority, as in London.

*Glasgow.* The city pays little directly, except in Govan and Paisley, for the right to operate lines in outside areas. The payment to Govan amounted in 1904-5 to £5,080, equivalent to the interest and sinking fund charges on the cost of the lines, plus certain minor fees. This can hardly be called a payment for "franchise," for it is not more than a fair rental for the physical property. Glasgow would doubtless have to pay as much if it owned the lines instead of renting them. The agreement with the private company in Paisley, where Glasgow has running powers over one line, calls for the payment to the company of the net profits of the traffic, amounting in 1904-5 to £915, so that this cannot be considered in the nature of a franchise payment. Indirectly the outside areas get some compensation through such provisions as that one which requires that fares shall be no higher than in the city proper.

Glasgow has been required to do some street work and bridge building within and beyond its own boundaries, but how much it amounts to in all and how much could be called payment for the right to operate, I could not ascertain satisfactorily. The paving requirements in a sense are a *quid pro quo,* for the paving on the portion of the road occupied by the tramway in outside areas is better than on the rest of the highway and on adjacent roads. But as the department must pave the same portion of the street within the city, it is not compensation in the fullest sense.

*Manchester.* The paving requirements are the ordinary ones, and the department has been called upon to widen certain streets and rebuild certain bridges. Regarding both these matters, the remarks made in the preceding paragraph apply. In one instance, viz., the purchase of the old Infirmary site in the center of the city, the cost to the department is known. Part of the land acquired for £400,000 has been added to the streets, and the tramways department is paying the interest, sinking fund and other charges upon £100,000, although the capital account has not been debited with the principal. This arrangement is not under statute, but the result of a decision adopted by the city itself.

As already stated, Manchester leases lines from a number of outside local authorities and in 1904-5 paid £10,000 rental. So far as I can ascertain, this item was not much in excess of what the city would have had to pay if it had owned the lines and if they had been within its own area.

*Liverpool.* Litherland is the only outside area in which the city owns lines. The usual paving clause is in force. The lines in Bootle belong to that borough, and the rental paid is probably not more than what Liverpool would have to pay if it owned the lines. The fares must be the same as in Liverpool, but this is only an indirect benefit if it is one at all.

*London C. C.* Under the law the approval of the borough council, in whose areas the lines are to be, must be had before the lines are authorized. Therefore, if the borough council will give its consent only upon agreement that certain work be done or that certain conditions be accepted, the County Council must decide whether it will yield or drop the project. The terms commonly exacted so far have had to do with street widenings, paving of areas beyond the customary 18 inches and bridge reconstruction. In most cases of street widening, the principle has been to make the tramway department pay the whole cost, if the work was done wholly for the purpose of allowing the tramways to pass, and to apportion one-third of the cost to the tramways, one-third to the general funds of the county and one-third to the borough, if the street was to be widened partially to facilitate the normal street traffic and partially to provide for tramways. Apparently most of the street widenings have come under the latter head, for according to the Comptroller of the County Council, 19 street improvements had been authorized by the Council up to March 31, 1906, which are estimated to cost £1,055,153, of which £363,653

are to be paid by the tramways department; £89,349 have already been charged but not entirely allocated. I have not been able to secure a satisfactory estimate of the cost for bridge widening and extra paving. In Schedule IV, inquiry K 3, the total amount spent for street widenings and bridge alterations upon the Southern system and for outlay not allocated is given as £104,140.

*London United.* Inasmuch as companies and municipalities alike are generally required to pave the portion of the street between the tracks, between the rails and 18 inches on either side, this ordinary requirement may be omitted from a consideration of franchise compensation, as has been done above. But this company is obliged to do more, as shown under D 12, paragraph III. It is impossible to give an estimate of the cost of this extra work, for the expense, either for capital outlay or current repairs, is not kept separate from other paving and street construction charges.

Several of the local authorities have been authorized to run cars upon the company's tracks to convey refuse and road materials and for other sanitary purposes from midnight to 5 or 6 A. M. If electric current is furnished by the company, it must be paid for. This proviso appears in most of the acts now passed by Parliament, and where a municipality is operating in outside areas the local authorities in those districts have the same rights that they have under a company. Further, within the municipal areas, either by statute or agreement this privilege has been accorded to other departments so that it may be omitted from consideration here. Little use has been made anywhere of the privilege.

A considerable number of the acts contain clauses reserving to the local authorities the right to use the standards free of charge to support electric light wires and lamps. In one instance, the privilege of using them as sewer ventilators is reserved. So far as I could learn, not much use has been made of this power and its value is not great.

The principal form of compensation is the widening of streets at the expense of the company. The acts passed prior to 1898 contained practically nothing of this nature, but since that date nearly every one has specified certain work to be done. The expenditure up to the end of 1905 for this purpose was £645,000, according to the accounts of the company, and it is estimated that another £100,000 may be necessary to complete the work authorized.

Certain annual cash payments have also been exacted by some fourteen authorities in bills passed since 1898. Usually they recite that in view of the deferrment of the date of purchase to 25 or 30 years from date (the general law says 21 years), the company agrees to pay £———— per annum in quarterly installments, beginning when the line is opened in some cases and in others when the bill becomes a law. In certain instances the payments are the same throughout the period, in others they increase periodically. During 1905, the company paid £1,630 under this head—called "wayleaves" in the accounts—many of the statutory requirements not yet having become operative. In 1899, the amount was £350.

and it will gradually increase until it reaches about £5,600 in 1918.

In two cases, the company agreed to pay certain amounts (£300-£500 in one instance and £100 per mile in another) in order to get the consent of the local authority.

In addition, there are several minor clauses, each applicable in one district, as follows: The company shall allow the local authority to lay a telephone wire for fire alarm purposes in its ducts, if so requested; shall erect, light and maintain at 20 places an electric lamp of such a character and height as required by the council, to be lighted as long as the cars run; shall erect two such lights in each of two other areas and one in a third; shall pay £1,000 for certain purposes; shall provide, erect and maintain clusters of electric lamps in three places; shall pay £1,000; and shall fill up three ponds on the village green.

*Dublin.* According to the reports of the company, it has borne the cost of widening a street to the extent of £7,000—a condition imposed by a local authority before giving its consent to a further grant of powers—but this is the only case of its kind. In addition to the usual paving requirements, the company has been required to pave the whole of one street for a distance of 2 miles at a total cost of £10,032, according to the company. It must also maintain this paving, but the cost of repair is said to be small. Additional paving is also required in front of certain buildings (see D 12, paragraph III above), but I am unable to give an estimate of the cost for construction or repair.

The acts do not so specify, but there are agreements between the company and the local authorities, made to obtain the consent of the latter to the passage of the acts, calling for annual payments either as a lump sum or as so much per mile of street occupied. In 1905, they amounted to £14,567. The capital account of the company also shows an item of £9,183 consisting of payments to local authorities to obtain their consent.

The road authority may use the company's tracks from midnight to 7 A. M. for the conveyance of coal, refuse and road materials by horse cars. The cars used must be approved by the engineer of the company, but if he objects appeal may be taken to the Board of Trade. This clause is quite general both in municipal and company undertakings. No advantage has been taken of it, but the city is preparing to do so.

*Norwich.* When the company was created, it was empowered and required to widen certain streets and to lay out two new streets. All of the work was to be entirely in its hands, and it was to pay two-fifths of the cost, three-fifths being borne by the city. For this purpose the company has spent £44,000, which is to be paid by the city if it buys the undertaking, less an amount equal to what a sinking fund would accumulate at 3 per cent. on a 50 year basis from 1897 to the date when the city purchases (see D 8, paragraph IX, above). The paving to be done above the usual 18 inches is the space between the rails and the curb wherever the

distance is less than 3 feet. The length of street to which this applies is estimated to be about a mile.

After 21 years, the company shall pay to the city one-half of the surplus profits over 7 per cent. on the ordinary stock, and if any difference of opinion arises between the company and the city regarding this provision, it shall be settled by an arbitrator appointed by the Board of Trade. The company shall allow the city to use the tracks without charge for the conveyance of refuse and road materials between midnight and 6 A. M., but if any current is taken it shall be paid for. So far no advantage has been taken of this provision. The city also may use and does use the standards for electric lighting purposes. No cash payments are made for "wayleaves."

D 28. Give statutory provisions regarding audit of accounts.

*Glasgow.* The English law as given below does not apply, but the statutes require that the city shall appoint auditors annually who shall not be officeholders but skilled in accounts, and also fix their compensation.

*Manchester, Liverpool.* The accounts of English boroughs must be submitted to three auditors. Two are elected annually by the ratepayers, and the third is appointed by the mayor. The elective auditors may charge two guineas per day for their services, under the Public Health Act. The mayor's auditor is unpaid. The elective auditors must be qualified to be members of the town council, but must not be members or officials of the council. The mayor's auditor must be a councillor. They have no power to charge an officer with an item illegally expended and order that he pay it. They can only report what they find and appeal to the public or the city officials to take action. Most of the large boroughs also appoint trained accountants as auditors, although not required to do so by law.

*London C. C.* The auditor is appointed and removed by the Local Government Board, which fixes his salary, prescribes his duties and directs his activities. He has power to disallow any item of expenditure and direct the disbursing officer to make it good, subject to appeal from his decision to the Local Government Board. Payment by the L. C. C. for his services is made in the form of a stamp duty which varies according to the sum total of the expenditures audited.

*Companies.* None, except that auditors are to be appointed by the shareholders.

D 29. Give statutory provisions regarding publicity of reports and records.

*Municipalities.* Separate accounts must be kept for the tramway undertaking.

*London United.* None, except that the light railway orders, which apply to but a few lines, require that the company must keep its accounts in the form prescribed by the Board of Trade and shall make such returns as the Board shall require.

*Dublin.* Some of the early acts provide that the company must produce its books, records, etc., for the inspection of any one appointed by the city. The recent acts are silent upon this point.

*Norwich.* None, except that city may inspect accounts to ascertain the accuracy of the apportionment of the profits after 21 years, as provided above.

D 30. Give statutory provisions regarding settlement of claims for injuries or death. None.

D 31. Give statutory provisions regarding salaries paid. None.

D 32. Give statutory provisions regarding wages to day laborers. None.

D 33. Give statutory provisions regarding hours of labor of day laborers. None.

D 34. Give statutory provisions regarding employers' liability. See answer to inquiry D 34 under Gas, which applies here.

D 35. Give statutory provisions regarding pensions to employees.

*Glasgow.* See inquiry D 35 under Gas. Contributions may be made to the funds of any friendly society, or superannuation, provident, or other fund for its employees, and the employees may be required to contribute.

*Manchester.* See inquiry D 35 under Gas.

*Liverpool.* See inquiry D 35 under Electricity.

*London C. C.* A scheme has been framed under the General Powers Acts of 1891 and 1892 by the County Council. See discussion in Schedule II.

*Companies.* No statutory provisions in any instance.

D 36. Give stautory provisions regarding strikes. None.

D 37. Give statutory provisions regarding citizenship of employees. None.

D 38. Give statutory provisions regarding conditions under which employees labor.

None, except the general provisions in such acts as the Factories and Workshops Acts, which apply equally to municipalities and companies.

D 39. Give statutory provisions regarding other important matters.

The Act of 1870 contains several sections providing for the use of tramways by competing companies, which were thought to be of some value, but evidently they have proved useless. Briefly summarized, they authorize the local authority or 20 inhabitant ratepayers of the district to appeal to the Board of Trade any time after a line has been opened three years and represent that the public are deprived of the full use of the tramway. If the Board concludes that such is the case, it may license a new company or a person to run cars for not less than one year nor more

than three years, with possibility of renewal, under such restrictions as to the number and kind of cars to be run, the rental to be paid for the use of the lines, etc., as it wishes to impose.

D 40. What means have been provided for the enforcement of the above provisions?

D 41. Are they adequate? D 42. Give defects.

I. The various remedies for enforcing statutory regulations may be grouped into four classes, viz., judicial, legislative, administrative and "extra-legal." The first class includes the well-known remedies applied through the courts, and its scope, advantages and defects have been stated in answer to inquiries D 40, 41 and 42—I, under Gas, q. v.

II. The second class of remedies—administrative—is much more comprehensive than in the case of gas undertakings and quite closely resembles those adopted in the electric lighting acts, as will be seen when a comparison is made of the data under inquiries D 44 for Gas, Electricity and Tramways. The central department having most to do is the Board of Trade; the others of less importance are the Postmaster General, the Local Government Board, the Secretary of State and the Treasury. The central supervision over sinking funds and loans (see D 22, 25 and 44—II, III) is quite effective. As the same principles apply here as in the case of Gas Works, the reader may be referred to inquiries D 40, 41 and 42—II under Gas for a discussion of the advantages and disadvantages of this control as a remedy.

The Board of Trade has larger powers over tramways than any central department has over gas undertakings and about the same powers that it has over electric supply works. This is due to the fact that when the Gas Acts were drafted central control was in an embryonic stage and its utility not generally admitted. By the time tramways were first widely promoted—in the seventies—the desirability of central supervision had been demonstrated and it was introduced in the very first horse tramway acts. When mechanical power came to be considered practicable and later when electric traction was mooted, this supervision was extended to correspond roughly to the authority given to the central government over electric supply undertakings.

The powers are so broad that so far as the safety of the public is concerned they apparently provide adequately for the *enactment* of proper regulations and safeguards. But what may be done in case of disobedience of statute or ordinance? The duty of enforcement is largely handed over to the private individual and the local authority upon the theory that if neither is sufficiently affected thereby to induce him to act, the disobedience cannot be so harmful as to call for any action. The Board of Trade has no adequate system of inspection of its own to discover illegal acts or delinquencies. It does not even have the power to audit the accounts of companies or to revoke either in part or in whole the powers of a company or a municipality, as it has in the case of electric supply un-

dertakings. The general attitude of the Board seems to be that its work is done when it has issued its decree. In those cases where its approval must be had to validate an act, the remedy is largely self-acting, for the fear that the act may be questioned at any time and that financial loss may result is a strong deterrent force.

The system of *local* administrative control is quite limited. In the case of municipal plants the town council is the ultimate source of authority, and although of course an appeal may be taken at any time from the action of a subordinate to a higher official, and finally to the town council, there is no established, legalized method of procedure. It is all more or less informal, and any change in the policy of the council must be brought about by persuasion or the election of other members. The powers of the local authorities over private companies are set out under D 46, from which it will be seen that their powers are greater than in the case of gas plants or electric supply works, but not of great importance or efficiency when one considers all of their limitations.

III. Upon the subjects of legislative and extra-legal remedies and the efficiency of all remedies when taken as a unit, the reader is referred to inquiries D 40, 41 and 42, subheads III, IV and V in the Gas Works Schedules, as the principles there stated apply to tramways as well, barring of course the illustrations which are not applicable.

D 43. If judicial or administrative orders have been issued by central authorities relative to electric supply undertakings, state them, and give source and date of issue.

None of importance, except those referred to under inquiries A 5-8, D 22, 25, 44 and 48.

D 44. If any central board, commission or other authority has control or supervision as regards tramway undertakings give statutory provisions relating to its powers and functions.

I. There are five departments of the central government that exercise some sort of control: The Postmaster General, the Local Government Board, the Secretary of State, the Treasury, and the Board of Trade. The powers of the Postmaster General have for their object the protection of the telegraph and telephone lines under his jurisdiction. Consequently they have come into being principally since the electrification of tramways. Under the clauses usually incorporated in acts and orders, notice of all electric work to be done within ten yards of a telegraphic line, except repairs, must be served in due time upon the Postmaster General, specifying the character of the line to be laid, work to be done, etc. In all this work, the regulations adopted by the Postmaster General to prevent injury to his lines and interference with their working must be obeyed; and if any of the lines are injuriously affected, the undertaking must bear the expense of the alterations necessary to remedy the injury and to prevent its recurrence.

II. The Local Government Board and the Secretary of State have practically the same powers relative to the acquisition of dwellings occupied by workingmen; the former outside of London, the latter within. The provision ordinarily inserted in the statutes is that ten (or twenty) or more houses occupied by laborers may not be taken without the consent of the Local Government Board or the Secretary of State. This clause did not appear in the early tramway acts, for the housing question was then not so vital as at present, but in recent years it is seldom omitted wherever considerable property is to be acquired. In the acts relating to London, the restriction is more severe. The taking of ten houses is prohibited in certain statutes unless a scheme for the rehousing of the persons displaced has been approved by the central authorities; and in a few, the acquisition of as many as twenty houses has been prohibited absolutely. In Dublin, the Local Government Board for Ireland has jurisdiction and where ten or more houses are to be removed, a rehousing scheme must be approved. There is apparently no difference between companies and municipalities on this score.

The Local Government Board has jurisdiction also over sinking funds under the Local Loans Act of 1875, as set forth under inquiry D 25. The only undertaking whose accounts are audited by Local Government Board auditors is that of the London County Council (see D 28).

III. The functions of the Board of Trade are much more numerous and varied. A complete list in all detail would fill pages, and a reading of the statutes is necessary to define its powers fully. Only the more important ones need be mentioned here, and those of general application will be given first.

The approval of the Board of Trade must be obtained for all plans for construction work, including power stations, track construction and street work, materials to be used, etc.; of the style of rails to be used; of all changes in method of traction, particularly mechanical traction; of the ordinances issued by the local authorities relative to tramways; of the substitution of double for single tracks; of working agreements with other companies or local authorities; of the purchase of undertakings by public authorities (see D 8—IV, VI); of the transfer of powers or property from one company to another (D 2); of the borrowing of money by municipalities outside of London; of the period of the repayment of loans by municipalities (D 25); etc. In the case of the L. C. C. the terms of loans are fixed by the Treasury and not by the Board of Trade. When the system or an extension has been completed, it must be inspected by the agents of the Board and a certificate issued that it is fit for use before it may be opened for public traffic.

The Board of Trade appoints a referee to determine the value of an undertaking in case of compulsory purchase under the Act of 1870 when the city and the company cannot agree (see D 8—II); issues orders terminating the powers of an insolvent company

(D 8—V) or those relating to a discontinued line (D 8—VI); appoints an arbitrator to settle disputed questions; regulates the service of workmen's cars upon appeal (D 15—III); revises rates of charge upon appeal (D 15—V); may extend the period allowed for construction (D 12—IV); may license a competing company or person to use the tracks operated by another company, if it decides, upon appeal, that the public is being deprived of the full use of the tramway, and determine the restrictions and conditions under which the licensee shall operate (D 39); may make inquiry, upon appeal, as to the maintenance and repairing of the track and paving (D 16), etc.

The Board of Trade also issues, rescinds and amends regulations for the protection of the public health and safety from dangers arising from the use of mechanical traction, and for the prevention of fusion and electrolytic action; and may likewise regulate the use of signals, the emission of smoke and steam, stopping places, entering and leaving cars, etc. Although the regulations for each undertaking usually differ slightly from those in force in another place, the subjects dealt with are practically the same when the method of traction is the same. They relate to the kind of brakes, speed indicators, number of cars, fenders, signal bells or whistles, head lights, trailers, coupling of cars, speed upon each line and section (usually limited to from 6 to 10 miles per hour), the insulation of wires, safety fuses, difference of potential (not to exceed 500 volts usually), distance apart and height of standards, kind of electrical conductors, guard wires, stopping places, etc.

The powers of the Board of Trade relative to the granting of provisional orders are given and discussed in the special report on legislation in Great Britain.

IV. Besides these general provisions, there are certain other special powers, as follows:

*Glasgow. London C. C.* The Board of Trade may require the department to adopt such improvements, including a new style of rail, as it may consider necessary for public safety or advantageous for ordinary traffic.

*London United.* The Board of Trade may prescribe the form of accounts, require reports to be made and order the adoption of improvements under certain conditions (see D 14).

*Dublin.* Similar provisions to those in force in Glasgow in a few early acts (see D 14).

*Norwich.* The Board was to be the judge of whether substantial progress had been made within the time specified (D 12—IV), and may appoint an arbitrator to determine whether storage batteries or accumulators are advisable (D 14).

D 45. What have been the effects of this supervision?

I. The control possessed by the Postmaster General and the central departments as to workmen's dwellings is generally approved as wise and beneficial. There seems to be no opposition to

its existence or the manner in which it is exercised. This is also largely true of the supervision of the Board of Trade and the Local Government Board over loans and sinking funds. Municipalities insist that the periods of repayment are too short in view of the large expenditures for extensions and renewals they claim to have made out of revenue, and there are instances of unnecessary severity, but generally speaking the supervision is not objected to by the municipalities and is considered a wise and effective safeguard by the public. It may be unnecessary in many cases, but when needed it is a ready and effective weapon against unwise action whenever and wherever it may appear.

II. The control of the Board of Trade over other matters has called forth some adverse criticism. Perhaps it would be more accurate to say that the decisions of the board have been criticised rather than the system of supervision, for it seems to be quite generally recognized that there must be some sort of central control; otherwise an occasional company or municipality might not safeguard the public welfare with sufficient care. There is not much need of the control if a plant is well equipped and managed, but the system exists to reach the negligent or careless, and at the same time not to retard the efficient.

The principal ground of criticism is that the board has been too conservative, too cautious, too reluctant to allow the adoption of new methods. In its solicitude for the safety of the public, it has retarded the growth and extension of tramways. The speed restrictions particularly have been condemned as too severe, and it is currently reported that they are at times disobeyed. Ten, twelve or sixteen miles an hour in country districts is an absurd limit, especially in view of the fact that the law allows automobiles to go twenty miles an hour even in the crowded districts of London. It is also urged that experiments are too much opposed and that greater latitude should be allowed where a new form of traction is being considered. At present the attitude of the Board is more favorable to progress and growth than in the past. Higher speeds are being allowed, and there appears to be less criticism than formerly.

D 46. What powers of supervision do the local authorities possess?

This inquiry applies to those municipalities where lines are being operated by outside authorities, where the supervisory authority is separate and distinct from the tramway authority and where the tramways are in the hands of companies.

In such cases the local authority may appeal to the Board of Trade for an adjudication when the company is thought to be insolvent (see D 8—V), when lines have been discontinued (D 8—VI), when the service of workmen's cars is unsatisfactory D 15—III), when a revision of the rates of charge is considered necessary (D 15—V), and when the track or paving is in bad repair (D 16). When streets are to be torn up, notice must be given to the road authority seven days in advance; the work must

done under its superintendence and to its reasonable satisfac-
on; the expenses of such superintendence must be paid; and a
nit is fixed to the amount of road which may be torn up at any
e time and the time it is up, except with the consent of the road
thority. The local authority also may pass ordinances regulat-
g the rate of speed, headway, stopping places and traffic on the
reets in which tracks are laid, provided they do not annul or
nflict with the statutes or the regulations enacted by the Board
Trade, and provided the penalties do not exceed £2 for each of-
nse. The local authority further may license tramcars, drivers,
nductors, etc. Indirectly, considerable influence may be brought
bear when the time approaches at which the city may purchase
e lines (D 8—I, IX), but of course this is not often and usually
me distance in the future. The local authority may also oppose
e granting of new powers; this point is considered in the report
. legislation in Great Britain.

The above provisions are those generally applicable. Although
force in outside areas even where the systems are municipally
erated, they do not apply within the city areas of the munici-
lities here considered, except in London, for there the same au-
orities have jurisdiction over roads and tramways. In London,
e ordinance power of the road authority has been given to the
oard of Trade, licenses are issued by the Commissioner of Police
d the boroughs have no powers of purchase in any event, so that
ter all London is nearly on par with the other towns.

The special provisions applicable to single undertakings are:

*London C. C.* The overhead trolley may not be used, and posts
wires may not be placed in the streets without the consent of
e road authorities—the boroughs. The approval of the local au-
orities must be obtained for all working agreements operative in
eas outside of London.

*London United.* As in several other instances, the clauses
ry greatly according to the district in which the lines are lo-
ted. Those most frequently found are: The plans of all work
ust be submitted for approval to the local authorities, but ap-
oval may not be withheld unreasonably; the location of stand-
ds, wires and brackets to be placed in the streets must be ap-
oved by the local authorities; the lines shall not be used for the
nveyance of animals or goods except under regulations approved
the local authority. In isolated cases, the following are in
rce: The designs of cars, standards, etc., must be locally ap-
oved; the color which is used to paint the poles, standards, etc.,
ust be approved by the county surveyor; center poles may not be
ed without consent; center poles may not be used at all; the
al authority may condemn any rolling stock or any part of the
amways which it considers unfit for use, dangerous to the public
in a bad state of repair; the local ordinance power shall include
e right to regulate fares.

*Dublin.* Style of standards must be approved by the engineer of the road authority and painted as he directs. The road authority may also direct how and where fixtures to be placed in or over the street shall be located.

*Norwich.* All wires, poles and supports shall be of a design and so erected as approved by the city. The poles shall be painted in the manner and as often as required by the city. The cars must be repaired and painted to the satisfaction of the city. No advertisements shall be affixed to the poles or cars without the city's consent, and as a condition of such consent the city has obliged the company to agree to pay one-quarter of the revenue from advertising up to £600 and one-half of all over this amount. Appeal may be taken to the Board of Trade to compel the introduction of storage batteries or occumulators (D 14). The number of directors shall be 4 at first, and the company may increase the number to 7; but the number shall never be less than 3 or more than 7. One of the directors, elected by the other directors of the company subject to the approval of the City of Norwich, shall be a person on the roll of the citizens of Norwich; the mayor may appoint in case the directors of the company fail to agree.

D 47. What provisions has the city made for the exercise of its powers of supervision?

All seem to have taken advantage of the powers conferred and the proper officials have been appointed to look after the execution of the provisions.

D 48. Has the company resisted the enforcement of the legal provisions providing for public supervision?

*London United.* No record could be found of any important resistance. There is considerable distrust and a feeling that the company has not acted as expeditiously as it might.

*Dublin.* Two cases have been tried before the courts, one relating to the sanding of the track and the other to the alteration of a street grade. In the former the position of the city was upheld; in the latter, that of the company.

*Norwich.* A case is now before the courts regarding the maintenance of the junction of the paving done by the company and that done by the city. The local court held that the company should bear the burden, the higher court that the city should, and a final decision has not yet been handed down.

D 49. What provisions have been found impossible of enforcement, and why?

See inquiries D 40, 41 and 42.

# ENGINEERING MATTERS

## British Tramways

## (Schedule III)

By NORMAN McD. CRAWFORD and J. H. WOODWARD

H 1. Data for year ending: Glasgow, May 31, 1905; Manchester, March 31, 1905; Liverpool, December 31, 1905; London C. C., March 31, 1905; London United, December 31, 1905; Dublin, December 31, 1905; Norwich, June 30, 1905.

### DESCRIPTION OF PLANTS.

H 2. Give brief description of generating stations.

*Glasgow.* The whole of the energy required for operating the tramways is generated at one central station situated at Pinkston, about one mile from the center of the city. The site has been well chosen and affords ample water for condensing, which is taken from the Forth and Clyde canal running along one side of the station. Sidings connect with the Caledonian and North British railways by which coal supplies are delivered directly into bunkers just outside the boiler house, these having a storage capacity of some 4,000 tons. The main building consists of a steel framework with brick screen walls. The boiler room, engine room and condenser room are each 224 feet in length by 84 feet, 75 feet and 40 feet in width respectively. The two chimneys are each 263 feet in height above ground level. The 16 Babcock & Wilcox boilers are arranged 8 along each side of the boiler room. Each boiler is fitted with a chain grate mechanical stoker, the coal being fed into these from bunkers over the boilers, which are supplied by conveyors from the outside bunkers, into which coal is directly delivered from the railway trucks. Two fuel economizers placed in the main flues heat the feed water before it is passed into the boilers.

The engine room contains four main steam dynamos supplying three-phase alternating current. In addition there are two smaller units supplying continuous current which is used for driving the auxiliary plant and supplying power and light to the car depots during the night. All the above sets are of the slow-speed type, the engines being of an exceptionally heavy design. Six small steam dynamos are provided for exciting the main machines. A very complete switchboard occupies the end of the engine room,

from which the whole of the generators and outgoing feeders are controlled. Two electrically driven 50-ton traveling cranes are provided for handling portions of the plant when required.

The condenser room contains five sets of surface condensing plant, one being connected to each of the main engines, the fifth set taking care of the steam from the smaller sets and exciter engines. A 30-ton electric traveling crane affords facilities for dismantling this plant.

Space has been provided in the buildings for the addition of further steam dynamos, but in view of the latest developments, it is most probable that steam turbines will be erected in preference to slow speed engines of the type already in use. The general arrangement of plant is excellent and figures obtained in working show high efficiency and economy.

*Manchester.* The tramways department has no generating plant of its own, but purchases all energy required from the municipal electricity department, except for the leased lines in Middleton, Ashton-under-Lyne, Stockport and Stretford. In each of these cases the local municipal electricity station supplies the energy for the section of line in its respective district. The arrangement between the tramways and electricity departments regarding the charges made to the former for the energy used is as follows:

(a) A fixed annual charge per kilowatt installed to meet the maximum demand for traction purposes, with addition of

(b) A charge of so much per unit supplied to cover the running expenses.

The fixed annual standing charge per kilowatt would be made up of the following items:

(a) Interest and sinking fund in respect to moneys borrowed by the electricity committee for the provision of land and buildings for generating station, boilers, engines, generators, high-pressure switching gear, high-pressure mains, transforming plant, land and buildings for transforming stations and low-pressure feeders up to the trolley wires.

(b) The provision of a sum to be set aside each year as a renewals fund, it being understood that the amount so set aside shall be subject to the approval of the tramways committee.

(c) A proper proportion of the cost of coal and wages, which, in strictness, constitutes a portion of the standing charges.

The charges per unit supplied shall be the actual cost of generating the current with the addition thereto of a slight profit of three per cent. The energy supplied shall be measured at the substation end of the low-pressure feeders.

*Liverpool.* The tramways department has no generating plant of its own, but purchases all energy required from the city electricity department and from the municipal plant in Bootle.

*London C. C.* The power station for operating the system was in course of construction. Energy for working the tramways

was purchased from several companies. The council has temporarily installed two 1,600 K. W. alternating-current 3-phase steam dynamos at the Deptford station of the London Electric Supply Company and two 1,600 K. W. continuous current steam dynamos at the Loughborough station of the South London Electric Supply Corporation Ltd. The respective companies provide steam for working these sets. Energy is also obtained from the City of London Electricity Supply Company station at Bankside and from a 300 K. W. dynamo at the council's Streatham depot, which is driven by some of the old cable traction plant.

*London United.* The generating station is at Chiswick, almost at the eastern extremity of the area served by the tramways. There is no connection with any railway system, and the use of cooling towers has been adopted to enable the plant to run condensing, no other water supply being available. The buildings are most substantial and of a more than usually ornate character. The total capacity of the steam dynamos installed is 3,575 K. W., 2,500 K. W. of this being alternating three-phase current, and the remainder continuous current, which is supplied direct to the tramways system. There is also a 500 K. W. rotary converter installed at the generating station.

The engines are of the slow-speed type, direct coupled to the dynamos, and they exhaust into surface condensers. The boilers are of the Babcock & Wilcox water tube pattern, fitted with Vickers mechanical stokers supplied with coal from overhead coal bunkers, which are filled by means of bucket conveyors carrying coal up from hoppers into which carts discharge. There is an electrically-driven traveling crane in the engine room for handling the plant. High and low tension switchboards are provided for controlling the machines and distributing current to the various feeders in the substations.

*Dublin.* All the power required for operating the tramways is supplied from a single station at Ringsend, which is well situated for obtaining supplies of fuel and water for condensing purposes. The buildings are of a substantial character and well designed for their purpose. The boiler house is 150 feet by 80 feet, and the engine room 180 feet by 80 feet. Two steel chimneys, each 220 feet in height, have been provided. Coal is brought by water and transferred directly from ship by conveyor into bunkers.

The principal supply is given direct to the tramway system at 500 to 550 volts continuous current, but one generating unit is of the three-phase alternating-current type for supplying rotary converters situated in substations at the more distant points of the system. The steam dynamos have a total capacity of 3,450 K. W., and in addition there are two 250 K. W. rotary converters which act as a standby to the single alternating current unit. The station was designed by the same engineer as the one at Glasgow, and the arrangements generally are of the same character, but the units are of smaller size.

*Norwich.* The tramway company owns its own generating station situated fairly in the center of the system. The buildings are of a less elaborate character than those in Dublin and Glasgow, but are suitable for their purpose. The total capacity of the station is 800 K. W., but provision has been made in the buildings for a further 200 K. W. unit. There are no mechanical arrangements for handling coal, and the boilers are hand fired. Water is obtained for condensing from a river running alongside the end of the station. The boilers are of the Babcock & Wilcox water-tube type, and a Green's economizer is inserted in the flue for heating the feed. The engines are of the horizontal tandem compound type, running at 186 revolutions per minute, coupled direct to Westinghouse dynamos. There is a hand traveling crane in the engine room, capable of lifting 5 tons. A switchboard is provided with a panel for each of the generators, and for controlling 10 feeders. The whole of the supply is given direct to the tramway system at 500 to 550 volts continuous current.

PARTICULARS OF GENERATING STATIONS.

| | *Steam Engines.* | | | *Boilers.*[1] | | *Dynamos.* | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Undertakings.* | *No.* | *H. P.* | *Total H. P.* | *No.* | *Total H. P.* | *No.* | *Type.* | *K. W.* | *Total K. W.* |
| Glasgow ..... | 4 | 4,000 | 16,000 | 16 | 10,656 | 4 | A. C. | 2,500 | 10,000 |
| | 2 | 800 | 1,600 | .. | .... | 2 | D. C. | 600 | 1,200 |
| | 6 | 80 | 480 | .. | .... | 6 | D. C. | 50 | 300 |
| | | | 18,080 | | | | | | 11,500 |
| Manchester ..... | . | .... | .... | .. | .... | . | .... | .... | .... |
| Liverpool ..... | . | .... | .... | .. | .... | . | .... | .... | .... |
| London C. C..... | . | .... | .... | .. | .... | 2 | A. C. | 1,600 | 3,200 |
| | . | .... | .... | .. | .... | 2 | D. C. | 1,600 | 3,200 |
| | . | .... | .... | .. | .... | 1 | D. C. | 300 | 300 |
| | | | | | | | | | 6,700 |
| London United.... | 2 | 1,500 | 3,000 | 11 | 4,000 | 2 | A. C. | 1,000 | 2,000 |
| | 3 | 750 | 2,250 | .. | .... | 1 | A. C. | 500 | 500 |
| | 1 | 100 | 100 | .. | .... | 4 | D. C. | 250 | 1,000 |
| | . | .... | .... | .. | .... | 1 | D. C. | 75 | 75 |
| | | | 5,350 | | | | | | 3,575 |
| Dublin ..... | 6 | 800 | 4,800 | 12 | 4,000 | 1 | A. C. | 550 | 550 |
| | 1 | 250 | 250 | .. | .... | 5 | D. C. | 550 | 2,750 |
| | . | .... | .... | .. | .... | 1 | D. C. | 150 | 150 |
| | | | 5,050 | | | | | | 3,450 |
| Norwich ..... | 4 | 320 | 1,280 | 4 | 1,320 | 4 | D. C. | 200 | 800 |
| | 1 | 15 | 15 | .. | .... | 1 | D. C. | 7.5 | 7.5 |
| | | | 1,295 | | | | | | 807.5 |

H 3. Give brief description of substations.

*Glasgow.* High-pressure three-phase current is transmitted at 6,500 volts to 5 substations where the pressure is reduced by means of static transformers to 330 volts. This is then supplied to rotary converters, which deliver continuous current at 500 volts, which is

[1] Boilers rated at 30 lbs. per H. P.

fed into underground cables running to feeder pillars which in turn are connected to the overhead trolley wires. All the static transformers are of the single-phase type and of 200 K. W. capacity. Three of these supply current to each of the rotaries, which have a capacity of 500 K. W. each. A small induction motor is provided for starting up each of the rotaries and on the opposite end of the shaft there is a small negative booster of 30 K. W. capacity. Complete switch arrangements are provided at each substation for the high tension and low tension current, the high tension switches being of the remote control type. The substation plant is erected in buildings which are attached to car depots. In some cases old buildings have been adapted.

*Manchester, Liverpool.* None owned by department.

*London C. C.* High-pressure, three-phase current (6,500 volts, 25 cycles per second) is transmitted from Deptford and Bankside to three substations where the energy is transformed by motor generators to continuous current at 500/600 volts. Each motor generator has a capacity of 300 K. W., the motor being of the synchronous type, and is provided with a direct-driven separate exciter. The exciters are used as motors for starting up the sets, a supply of current for this purpose being provided at each substation from a 60 K. W. induction motor-generator giving 125 volts continuous current. A static transformer reduces the 6,500 volt supply to low pressure for the 60 K. W. motor. Complete switchboards are provided for the high and low pressure supply; each low pressure feeder supplies half a mile of double track. Substations at Clapham and Brixton for the present receive low pressure continuous current from the machines at Loughborough and distribute this to the track. The Streatham substation has at present a 300 K. W. dynamo driven by an old steam engine, and supplies current for the reconstructed section previously worked as a cable tramway.

*London United.* A small portion of the system is supplied with current by underground feeders direct from the power station. The more distant portions are supplied with current through substations, four of which have been erected for the purpose, and consist of substantial brick structures adjoining car sheds. Static transformers and rotary converters are used at all the substations, the units being either of 250 or 500 K. W. capacity. Each rotary is provided with a small induction motor at one end for starting up and with a continuous current negative booster. Suitable high and low pressure switchboards are provided at each substation, together with traveling cranes for handling the plant.

*Dublin.* Some of the outlying portions of the system are supplied from three substations. These receive primary three-phase current from the main generating station and transform it by means of static transformers and rotary converters or motor generators to continuous current at 500 volts. The substations are

all situated at car depots and generally in buildings which were used when the system was operated by horse traction.

*Norwich.* None are owned, current being supplied to the trolley line direct by underground feeders from generating station.

SUBSTATION PLANT.

| *Undertakings.* | *Number of Units.* | *Size of Units. in K. W.* | *Total K. W.* | *Total for Undertakings.* |
|---|---|---|---|---|
| Glasgow ..... | 24 | 500 | 12,000 | 12,000 |
| Manchester ..... | .. | ... | ..... | ..... |
| Liverpool ..... | .. | ... | ..... | ..... |
| London, C. C..... | 16 | 300 | 4,800 | |
| | 3 | 60 | 180 | |
| | | | | 4,980 |
| London United..... | 8 | 250 | 2,000 | |
| | 3 | 500 | 1,500 | |
| | | | | 3,500 |
| Dublin ..... | 2 | 200 | 400 | |
| | 2 | 60 | 120 | |
| | 2 | 50 | 100 | |
| | 1 | 250 | 250 | |
| | 2 | 100 | 200 | |
| | | | | 1,070 |
| Norwich ..... | .. | ... | ..... | ..... |

**DISTRIBUTION SYSTEMS.**

H 4. Underground lines.

On all systems the whole of the high pressure feeders, low pressure feeders and negative feeders are laid underground.

*Glasgow.* The whole of the cables are laid on a draw-in system, conduits having 3-inch diameter ways. Suitable manholes (1,189 in number) are provided along the cable routes to enable cables to be drawn in and out and inspected from time to time. Both high and low tension cables are insulated with impregnated paper enclosed in a lead sheath. The total length of ways provided in conduits is 1,131,000 yards, these being laid in 128,700 yards of trench. In addition to the power cables, telephone and test cables have been provided throughout the area covered by the system, the total length of cable of all types amounting to 398.6 miles.

*Manchester, Liverpool.* All cables are the property of the municipal electricity departments.

*London C. C.* The cables are laid on the draw-in system, the conduits being of stoneware having 3¼ inch diameter ways, the total "duct" feet provided being about 1,000,000. High-tension cables are of the three-core type, insulated with paper enclosed in a lead sheath. The sectional area of the conductors is .075 and .15 square inch. The low-tension continuous current cables are of the single-core type also insulated with paper and a lead sheath, the sectional area of the conductors varying from .15 to .75 square inch. The whole of the electrically operated lines are equipped on the conduit system. The conduit is formed in cement concrete. The depth from road level to the bottom of conduit is 2 feet, and the internal width is 1 foot 4 inches. Both positive and negative

conductors are insulated from the earth, and consist of tee iron. They are fixed 6 inches apart and at a depth of 12 inches from road level to the centre of the conductors. The length of route, all with double track, reconstructed for electric traction and in operation at the end of the year was 26.625 miles.

*London United.* No detailed particulars were available. A portion of the cables are laid on the draw-in system, the conduits principally consisting of wrought-iron pipes lined with cement. The other cables are laid on the solid system in earthenware troughs. In making up our estimate as to the value of cables, we have allowed a similar amount per mile of track to that expended in Glasgow, of which we were able to obtain complete detailed information.

*Dublin.* Detailed particulars were not available. The total length of cable laid is about 188,000 yards, a portion of this being three-core, high-tension cable for transmitting alternating current to the substations, the remainder being single core low-tension cable for feeders and returns. Most of the cable is drawn into cement-lined wrought-iron pipes laid in concrete. Cables are insulated with impregnated paper enclosed in a lead sheath.

*Norwich.* Cables are laid on the draw-in system. There are nine positive feeders, each consisting of a single-core cable insulated with impregnated paper enclosed in a lead sheath, the conductor having a sectional area of .15 square inch. The total length of cable is some 18 miles. Conduits are of earthenware.

H 5. Overhead lines.

All tramway systems reported upon use the overhead trolley system, except the London County Council which uses the conduit system, and a few lines operated by horse traction pending the change to the conduit system. The London United has one short horse-car line. All poles are of steel and usually provided with ornamental cast-iron cover extending some five feet above the ground. The poles are placed at a distance not exceeding 40 yards apart. In some cases, especially Glasgow and Liverpool, rosettes have been used to some considerable extent for carrying the span wire. In all cases a double insulation is used between the trolley wire and earth. It was not possible in all cases to obtain definite particulars as to the length of route equipped with each type of construction, and the number of poles used. The following table gives the information so far as it could be obtained; in some cases the figures are only estimated:

OVERHEAD EQUIPMENT (IN MILES).

| *Undertakings.* | *Centre Poles.* | *Span Wires.* | *Rosettes and Span Wires.* | *Side Poles with Brackets.* | *Total Route Mileage.* |
|---|---|---|---|---|---|
| Glasgow ..... | 6 | 41.4 | 26.6 | .... | 74 |
| Manchester ..... | 3½ | 72½ | 2¼ | 2¾ | 81 |
| Liverpool ..... | 16½ | 28¼ | 7 | 4¼ | 56 |
| London C. C..... | .... | .... | .... | .... | .... |
| London United.... | 2½ | 33½ | .... | ½ | 36½ |
| Dublin ..... | 2½ | 14½ | .... | 33 | 50 |
| Norwich ..... | .... | 8¼ | .... | 6½ | 14¾ |

## WORKING EQUIPMENT.

H 5a. Horses.

A certain number of horses are kept by each system for drawing tower wagons and such purposes. The London United employs horses for drawing passenger cars on a short length of line between Kew Bridge and Richmond, which is detached from the other portions of their system. Fifty-five horses are used for maintaining this service. The London County Council still have a large number of horses in use on portions of their system which have not yet been reconstructed. The number of horses in Manchester is somewhat large, owing to the fact that they own an omnibus service (9 buses) and also have 60 parcel vans in connection with their parcel express service. Dublin also has a parcel express system for which a number of horses are employed. The horses owned are as follows:

| | |
|---|---|
| Glasgow | 66 |
| London United | 91 |
| Manchester | 200 |
| Dublin | 80 |
| Liverpool | 28 |
| Norwich | 1 |

H 6. Passenger cars.

It is almost a universal practice to use double-deck cars, and in many instances the upper decks are covered and so arranged that in fine weather they become practically open. In no case was any heating apparatus provided in the cars. On all systems cars were electrically lighted, excepting the horse cars of the London C. C. and London United systems. No cars were vestibuled except 100 belonging to the Dublin company.

*Glasgow.* The standard car is of the double-deck type mounted on a single 4-wheel truck. Its seating capacity is 24 inside and 38 on the upper deck, making a total of 62. At the date to which accounts were made up, 120 of the cars had been fitted with covers to the upper deck. A similar arrangement was being adopted for the remaining cars. All cars are provided with fenders and hand brakes and electro-magnetic brakes.

*Manchester.* The standard car is of the double-deck type mounted upon single 4-wheel truck, provided with trigger lifeguards and hand and electric rheostatic brakes; 60 of the cars are also fitted with electro-magnetic track brakes.

*Liverpool.* The standard car is of the double-deck type mounted upon a single 4-wheel truck. All are fitted with hand and electric-rheostatic brakes. A special type of fender is employed. The cars seat 22 passengers inside and 42 on the upper deck, making a total of 64 seats. They are allowed by the police regulations to carry an additional 9 passengers standing on the lower deck. The upper deck has a cover and can be entirely closed in bad weather and opened in fine weather.

*London C. C.* Three types of cars are in use: (a) double-truck double-deck, seating 72 passengers per car; (b) double-truck single-deck, seating 36 passengers each; (c) single-truck double-deck, seating 56 passengers per car. All cars are fitted with fenders and hand brakes; in addition, 341 of the cars have electric rheostatic brakes and 76 have magnetic track brakes. Eighty-one of the cars are provided with covers to the upper deck.

*London United.* All the electric cars are of the double deck type mounted upon two maximum traction trucks, fitted with lifeguards and hand brakes; 240 are also fitted with electric rheostatic brakes, and 100 with electro-magnetic track brakes. Forty of the cars have covers to the upper deck. Each seats 69 passengers, excepting 9, which are used for horse service between Kew and Richmond.

*Dublin.* The standard car is of the double deck type mounted upon a single 4-wheel truck. All cars are provided with lifeguards and hand brakes, and 100 also have rheostatic brakes for use in emergency. One hundred of the cars are vestibuled and 12 had been fitted with covers to the upper deck.

*Norwich.* The cars are of the double deck type, mounted upon a single 4-wheel truck. All are fitted with trigger lifeguards and hand brakes. Forty-two of the cars each carry 26 passengers inside and 26 outside, the other 5 carrying 21 inside and 21 outside.

CARS.

(S. T.—Single Truck. D. T.—Double Truck.)

| | *Single Deck.* | | *Double Deck.* | | *Double Deck with cover to upper deck.* | | *Total Passenger cars.* |
|---|---|---|---|---|---|---|---|
| *Undertakings.* | *S. T.* | *D. T.* | *S. T.* | *D. T.* | *S. T.* | *D. T.* | |
| Glasgow ..... | .. | 21 | 542 | .. | 120 | .. | 683 |
| Manchester ..... | 25 | 12 | 306 | 125 | .. | 64 | 532 |
| Liverpool ..... | 15 | 12 | 113 | 3 | 351 | .. | 494 |
| London, C. C. El.... | (?) | (?) | (?) | (?) | (?) | (?) | 401 |
| London United ..... | .. | .. | 9 (horse) | 300 | .. | 40 | 349 |
| Dublin ..... | .. | .. | 282 | .. | 12 | .. | 294 |
| Norwich ..... | .. | .. | 47 | .. | .. | .. | 47 |

**Besides the above, every undertaking has a number of cars and wagons for miscellaneous purposes.**

H 7. Car sheds.

| *Undertakings.* | *Number.* | *Total Capacity.* |
|---|---|---|
| Glasgow ..... | 9 | 1,062 |
| Manchester ..... | 2 | 517 |
| Liverpool ..... | 5 | 508 |
| London C. C..... | 1 | 174[1] |
| London United..... | 7 | 424 |
| Dublin ..... | 13 | 339 |
| Norwich ..... | 1 | 50 |

[1] **Also temporary sheds in use.**

*Manchester.* These sheds are of a most substantial character and have long frontages of ornate design, being of a much more expensive character than those used by the other undertakings.

*London C. C.* ————

*London United.* Most of these depots were constructed by the present company and are substantially built, generally well laid out and conveniently situated for dealing with traffic on various sections of the system.

*Dublin.* There are no less than 13 car depots, previously the property of the various horse tramways, which have been taken over and amalgamated in the present Dublin United Company. The buildings have been adapted for the electric service, but such an arrangement cannot be so convenient or economical as where fewer depots are in use.

*Norwich.* The one car depot has been put up specially for the purpose, and though plain is of substantial construction.

H 8. Repair shops.

All the undertakings have suitably equipped repair shops for carrying out the ordinary running repairs. In addition, Glasgow and Manchester are provided with sheds and all the necessary equipment for building their own car bodies. Liverpool also has a very complete repair plant, but does not build cars as is done by Glasgow and Manchester.

H 9. Permanent way.

All the systems investigated use grooved girder rails laid upon a bed of concrete not less than 6 inches deep. The usual practice is for this concrete bed to extend over the whole area between the rails and tracks and to an extent of 18 inches outside the outer rails. This method of construction has been adopted by all the systems investigated except Manchester, where the concrete forms a girder under each rail, having a width of 18 inches, the concrete bed not being extended further under the paving. The lengths of rail are generally joined by fishplates with six bolts. Electrical connection is secured across the rail joints by means of bonds. In Liverpool a considerable number of special joints have been tried in addition to the fishplates, and some 10 miles of the track have been electrically welded. The tracks are held to gauge by tie rods usually spaced 10 feet apart.

On all the systems the roadway between the rails and tracks and for a distance of 18 inches outside outer rails is paved at the cost of the tramway undertaking. The margins for the London C. C. system vary from 18 inches to 36 inches. This paving is in all cases maintained at the expense of the tramway undertaking. All the tramways examined are laid along the public streets and roads.

## Track and Paving.

| | *Glasgow.* | *Manchester.* | *Liverpool.* | *London C.C.* | *London United.* | *Dublin.* | *Norwich.* |
|---|---|---|---|---|---|---|---|
| Gauge of track..... | 4′ 7¾″ | 4′ 8½″ | 4′ 8½″ | 4′ 8½″ | 4′ 8½″ | 5′ 2 5/16″ | 3′ 6″ |
| Weight of rail per yard..... | 100 lbs. | 103 lbs. | 95 lbs. | 104 lbs. | 92½ lbs. | 105 lbs. | 65½ lbs. |
| Standard length of rails..... | 60′ | 60′ | 60′ | 45′ | 36′ | 30′ | 45′ |
| Height of rail..... | 7″ | 7″ | 7″ | 7″ | 6″ | 7″ | 6″ |
| Width of base of rail..... | 7″ | 7″ | 7″ | 7″ | 7″ | 7″ | 4″ |
| Paving (in miles of single track)— | | | | | | | |
| Granite setts ..... | 125.05 | 105.93 | 98.5 | Note[1] | 14.5 | 97 | 15.26 |
| Hard wood ..... | .76 | ..... | 4.0 | (?) | 57.0 | .. | 4.0 |
| Alcartrag ..... | 1.90 | ..... | .... | .... | .... | .. | .... |
| Whin setts ..... | 9.09 | ..... | .... | .... | .... | .. | .... |
| Prismatic blocks ..... | ..... | ..... | 1.0 | (?) | .... | .. | .... |

[1] All granite setts except in front of some churches and hospitals when wood or creosoted deal blocks are used.

H 10. Track mileage (in miles).

| | *Double Track.* | *Single Track.* | *Route Mileage.* | *Total as Single Track.* |
|---|---|---|---|---|
| *Glasgow:* | | | | |
| Owned in perpetuity..... | 66.30 | .18 | 66.48 | 132.78 |
| Under Clydebank order... | 2.03 | .. | 2.03 | 4.06 |
| Total owned..... | 68.33 | .18 | 68.51 | 136.84 |
| Leased from Govan..... | 4.35 | .18 | 4.53 | 8.88 |
| Running powers in Paisley | .99 | .. | .99 | 1.98 |
| Total of lines..... | 73.67 | .36 | 74.03 | 147.70 |
| Connections, sidings, etc.. | .. | 6.22 | 6.22 | 6.22 |
| Total ..... | 73.67 | 6.58 | 80.25 | 153.92 |
| *Manchester:* | | | | |
| Owned ..... | 44.45 | 17.03 | 61.48 | 105.93 |
| Leased from local auth.... | 16.414 | 3.34 | 19.75 | 36.17 |
| Running powers in Stockport..... | 1.40 | .. | 1.40 | 2.80 |
| Total ..... | 62.264 | 20.37 | 82.63 | 144.90 |
| *Liverpool:* | | | | |
| Owned ..... | 43.19 | 15.09 | 58.28 | 101.47 |
| Leased from Bootle..... | 3.85 | .56 | 4.41 | 8.26 |
| Total ..... | 47.04 | 15.65 | 62.69 | 109.73 |
| Only about 104 miles are operated, the remainder being held in reserve and used only in case of emergency. | | | | |
| *London, C. C.:* | | | | |
| Owned ..... | (?) | (?) | (?) | 56. |
| *London United:* | | | | |
| Owned ..... | 33.5 | 4.5 | 38.0 | 71.5 |
| All is electric traction but 1.5 miles of double track. | | | | |
| *Dublin:* | | | | |
| Owned ..... | (?) | (?) | 50. | 97. |
| *Norwich:* | | | | |
| Owned ..... | 4.45 | 10.36 | 14.81 | 19.26 |

## APPRAISAL OF PLANTS.

H 11. Appraisal of plant.

An estimate has been prepared of the cost of plant, permanent way, etc., belonging to each of the undertakings. From this an allowance has been made depending upon the length of time in operation to allow for depreciation. Deducting the amount so estimated there remains the structural value at the date to which accounts were made up. All undertakings have been valued on a similar basis, and the depreciation allowed on each item has been at the same rate in each case. It was impossible in some cases to value the land and buildings, also the underground cables and conduits, so that the estimates have in such case been based upon figures obtained from the undertakings or from their published accounts, or by taking notes of other undertakings of which detailed particulars were available.

APPRAISAL OF PLANT.

| | *Glasgow.* | *Manchester.* | *Liverpool.* | *London United.* | *Dublin.* | *Norwich.* |
|---|---|---|---|---|---|---|
| Land | £107,395 | £69,301 | £358,021 | £187,960 | £50,000 | £5,000 |
| Buildings | 439,784 | 217,158 | | | 130,260 | 18,931 |
| Generating plant | 227,587 | ..... | ..... | 81,012 | 73,180 | 17,850 |
| Substation plant | 97,020 | ..... | ..... | 30,935 | 10,705 | ..... |
| Underground cables and conduits | 354,668 | ..... | ..... | 171,250 | 180,000 | 8,315 |
| Overhead equipment | 74,043 | 103,767 | 64,795 | 47,854 | 52,500 | 18,553 |
| Track | 382,726 | 231,004 | 282,210 | 178,817 | 285,180 | 42,283 |
| Bonding track | 25,986 | | 12,789 | 8,483 | | |
| Paving | 440,943 | 344,163 | 333,733 | 277,447 | 315,153 | 49,485 |
| Cars | 227,111 | 151,088 | 141,284 | 157,100 | 102,900 | 14,100 |
| Car equipments | 171,043 | 133,000 | 148,200 | 86,500 | 73,500 | 15,750 |
| Horses | 1,848 | 5,600 | 560 | 2,275 | 2,000 | 30 |
| Miscellaneous | 62,531 | 15,588 | 15,072 | 11,000 | 10,000 | 2,275 |
| Estimate capital cost as new | £2,612,665 | £1,271,569 | £1,356,064 | £1,240,633 | £1,285,378 | £192,572 |
| Estimated depreciation | 298,466 | 73,103 | 252,758 | 171,953 | 257,629 | 32,153 |
| Structural value at date to which accounts were made up | £2,314,199 | £1,198,466 | £1,103,906 | £1,068,680 | £1,027,749 | £160,419 |

No appraisal has been made of the London County Council undertaking, due to the fact that reconstruction was going on and that the system was in a very incomplete state. Electric traction was in use over only a portion of the lines, and the energy for working these was obtained from various temporary sources.

## OPERATION.

H 12. Current generated and bought in units (k. w. h.).

| *Undertakings.* | *Generated.* | *Bought.* | *Total.* |
|---|---|---|---|
| Glasgow | 23,918,863 | ..... | 23,918,863 |
| Manchester | ..... | 18,854,240 | 18,854,240 |
| Liverpool | ..... | 21,186,782 | 21,186,782 |
| London C. C. | Particulars not available. | | |
| London United | 12,330,398 | ..... | 12,330,398 |
| Dublin | 8,624,125 | ..... | 8,624,125 |
| Norwich | 1,445,895 | ..... | 1,445,895 |

H 13. Current used (units).

| *Undertakings.* | *Sold.* | *Used at Works and Offices* | *Tramways.* | *Total.* |
|---|---|---|---|---|
| Glasgow | 1,243,532 | 2,116,124 | 17,951,961 | 23,918,863 |
| Manchester | ..... | 18,854,240 | | 18,854,240 |
| Liverpool | ..... | 315,780 | 20,871,002 | 21,186,782 |
| London C. C. | ..... | Particulars not available. | | |
| London United | ..... | 12,330,398 | | 12,330,398 |
| Dublin | 244,509 | 373,326 | 8,006,290 | 8,624,125 |
| Norwich | ..... | 41,818 | 1,404,477 | 1,445,895 |

H 14. Fare passengers carried.

(Statistics same as given under I 2, Schedule IV.)

H 15. Passengers carried free.

No record kept except at Liverpool, where the number was 84,139, made up of employees, 45,074; policemen, 24,000; officials, 12,615; committee, 2,450.

H 16. Passenger car mileage, car hours, population.

| *Undertakings.* | *Car Mileage.* | *Car Hours.* | *Hours of Service.* | *Population Served.* |
|---|---|---|---|---|
| Glasgow | 17,943,595 | 2,619,822 | 20 | 1,000,000 |
| Manchester | 14,123,124 | (?) | 18 | 750,000 |
| Liverpool | 12,067,033 | (?) | 19 | 750,000 |
| London C. C. | 14,081,397[2] | (?) | 18[1] | (?) |
| London United | 7,319,460 | (?) | 22 | (?) |
| Dublin | 7,443,243 | (?) | 18 | 448,000 |
| Norwich | 1,083,055 | 192,984 | 16 | 112,000 |

H 17. Speed of cars. (See also D 44.)

Before a tramway line may be opened for public traffic it is inspected by the Board of Trade and they have authority under Parliamentary powers to fix a limit to the speed of cars on various sections of the system. This speed is varied according to the gradients, width of street and any other local conditions. The highest speed allowed was 16 miles per hour on some sections in Glasgow and London C. C., but on the London United and Liverpool systems the maximum was 14. The following figures which apply to Liverpool, may be taken as illustrative of conditions generally.

On 10 per cent. of the system the maximum speed allowed was 14 miles per hour.

[1] To a limited extent all night.

[2] Including 10,931,396 for the electric system and 3,150,001 for the horse system.

On 54 per cent. of the system the maximum speed allowed was 12 miles per hour.

On 26 per cent. of the system the maximum speed allowed was 10 miles per hour.

On 10 per cent. of the system the maximum speed allowed was 8 miles per hour.

The average in Manchester, including stops, was 7.1 miles per hour on whole system.

H 18. Transfers.

The transfer system is not in use. In Norwich when passengers desire to travel over more than one route, they ask for a transfer ticket at the time of paying their fare, and a ticket is given for the entire journey if the entire fare is paid. No waiting rooms are provided at the transfer points. In Liverpool there is only one transfer point, where the Liverpool system joins up to the St. Helen's system. A waiting room is provided at this point.

H 19. Where do cars stop for passengers?

At predetermined points, usually indicated by signs attached to poles or by the poles being specially painted.

H 20. Car service.

The number of cars run on the various systems appeared generally sufficient to meet the requirements of the traffic, extra cars being put on to meet the larger number of passengers during "rush" hours. At one point in Glasgow as many as 466 cars pass per hour, giving a headway of 15 seconds, and this is increased to 516 cars per hour on Saturdays, or a headway of 13.8 seconds. The average number of passengers per car mile in Glasgow, taken over the year, was 10.91. Very little, if any, delay or waiting by passengers on any system, except on the London C. C. and the London United systems during rush hours. The service on the London C. C. system was limited owing to their generating station not being completed, power being obtained from various temporary sources.

Passengers are not generally allowed to stand on the cars, although it is allowed to some extent in Manchester, Dublin and Glasgow during wet and inclement weather. In Liverpool the cars are licensed to carry a certain number of passengers standing on the lower deck, usually 9.

H 21. Condition of cars.

The cars on all the systems were generally well painted and kept in good condition. In Glasgow each car was washed every night, repairs of general character made every six weeks and thorough overhauling once a year. The lighting and ventilation appeared in all cases satisfactory. No attempt is made to heat the cars during cold weather on any of the systems. All cars were provided with destination and route indicators, the former being carried from the upper deck railing at the front and back end of each car, and arranged so that they can be illuminated at night. In Glasgow cars running on different routes are painted different colors and at night carry colored headlights to correspond.

H 22. Advertising on cars.

*Glasgow, Manchester.* No Advertising.

*Liverpool.* Advertising is allowed and the department obtains a revenue of about £20 10s. per car per annum from this source. The class and nature of advertising must be approved by the general manager.

*London C. C.* Advertisements are allowed on screen boards outside and on the glass ventilators inside.

*London United.* Advertising is allowed on the screen boards along the roof and on the upper part of the windows of the lower deck.

*Dublin.* A five-year contract has been entered into. Advertisements are allowed in space over the windows and upon the outside of the cars.

*Norwich.* Advertising is just being adopted. To obtain the sanction of the city the company has agreed to allow a percentage on receipts from this source, the city taking 25 per cent. of all receipts up to £600 and 50 per cent. on receipts above that amount.

H 23. Were engineering tests being carried on?

All the undertakings are required by the Board of Trade to make and keep a record of certain tests relating to return current through earth and to the drop of potential in rails when these are used as a return circuit. Each undertaking is provided with suitable recording instruments for carrying out these tests.

H 24. Were there frequent complaints about interruption of service?

There appear to be very few interruptions of service on any of the systems, and a general cessation of service is not reported as having taken place on any of the systems except on one occasion in Manchester shortly after commencing to work, due to trouble at the main generating station.

## EXTENSIONS.

H 25. What factors have determined the extent and location of extensions?

*Glasgow, Manchester.* Population and the estimated earnings anticipated.

*Liverpool.* Population and the city boundaries.

*London C. C.* Local necessities and local conditions as to width of roadways, etc.

*London United.* Probable traffic.

*Dublin.* Probable earnings from investment and density of population.

*Norwich.* No extensions have been made.

In all cases Parliamentary powers must be obtained before a tramway may be laid along any public street or road, and where

such a tramway is to pass through a district under the control of any local authority other than the one applying for Parliamentary powers, the sanction of such authority must be previously obtained. The systems examined have fairly well covered the area allotted to them and have given a reasonably efficient service to the populations served.

H 26. Total length of extensions during the past year.

*Glasgow.* 2.38 miles for 1904-5, and 26.71 miles in the three years, 1901-4.

*Manchester.* 8.295 miles.

*Liverpool.* .471 of a mile.

*London C. C.* Reconstruction of old horse tramways not yet completed.

*Companies.* None.

H 27. Have the citizens of any section petitioned for extension to their district within the last five years?

*Municipalities.* Yes.

*Companies.* No.

H 28. Were extensions made promptly when there was a demand?

*Glasgow.* Promptly after Parliamentary powers had been obtained. Under the original act of 1870 over 22 per cent. of the tramways were outside of the city boundary. Now 36 per cent. are outside the city boundary.

*Manchester.* Yes, and some before there was actual demand.

*Liverpool.* Yes.

*London C. C.* System not yet completed.

*Companies.* Yes.

H 29. Has the necessity for passage of an act ever caused delay in extending the service?

*Glasgow.* Yes, and sometimes by a failure to agree with the local authorities of other districts.

*Manchester.* Yes, in one case.

*Liverpool.* No.

*London C. C.* Yes.

*London United.* Yes.

*Dublin, Norwich.* No.

H 30. Has service been extended in advance of the demand in order to stimulate the growth of a district, or has it awaited demand?

*Glasgow.* Probably all have been made prior to demand.

*Manchester.* To a slight extent in advance of demand.

*Liverpool.* Policy has been liberal and the city seeks to be in advance of demand.

*London C. C.* System not yet completed.

*London United.* Extended in advance of demand.

*Dublin.* Awaited demand.

*Norwich.* No extensions.

STREET WORK.

H 31. Was street work done by direct employment or contract?

*Glasgow.* All maintenance by direct labor; extensions by direct labor or contract. No rule.

*Manchester.* Direct employment.

*Liverpool.* Direct employment under control of highways committee.

*London C. C.* Contract, except repairs.

*London United.* Direct employment.

*Dublin.* Both contract and direct labor.

*Norwich.* Contract, except repairs.

H 32. Was the work done by contract properly inspected?

Yes, wherever contracts were made inspectors were appointed to supervise the work.

H 33. Was the work performed in an efficient manner?

Ordinarily, yes. Some trouble sometimes experienced before final acceptance and payment.

H 34. Was the street surface promptly restored after openings were made?

Yes, so reported in each case.

H 35. Was water used in puddling ditches?

No, except by the Dublin company.

H 36. Were open trenches and obstructions properly guarded?

Yes, in each instance.

H 37. How are sunken trenches taken care of?

Fenced and lighted in each case.

H 38. What has been the policy in regard to improving the condition of street services prior to street paving or repaving?

*Glasgow.* It is intended to provide for all sub-pavement improvements and constructions before pavement is laid. This is ordinarily accomplished.

*Manchester.* The standing orders of the city provide: To obviate the frequent disturbance of the surface of the streets, which are under the charge of the paving, sewering and highways committee, any other committees of the council intending to disturb the surface of the streets for any purpose shall, except in cases of emergency, give notice to the paving, etc., committee of such intention, and upon the receipt of such notice it shall be the duty of the paving, etc., committee to inform any other committee having work to do of a kindred character, in order that it may be completed at the same time.

*Liverpool.* Work necessary for pipes, sewers, tracks, etc., is done in advance of paving or repaving.

*London C. C.* ————

*London United.* Notice is given to local municipal authority.

*Dublin.* All street services were looked to prior to paving, so far as possible.

*Norwich.* Notice given to city before repaving.

H 39. Is there an up-to-date map showing location and nature of all street mains and fixtures?

*Municipalities.* Yes.

*London United.* Yes.

*Dublin, Norwich.* No.

H 40. Who decides where underground structures shall be located in the street?

The exact location of the tracks is determined by Parliament or the central authorities; otherwise as follows:

*Glasgow.* The statute labor committee of the common council.

*Manchester.* Paving, etc., committee of the council.

*Liverpool.* The health committee of the council.

*London C. C.* Highways committee.

*Companies.* By each company as approved by local authority.

H 41. Is a permit from a public authority required before street may be opened?

*Municipalities.* From a committee of the council.

*London United.* Only notice by company.

*Dublin.* Notice required to gas company and city.

*Norwich.* No.

H 42. Is a separate permit obtained for each opening?

*Municipalities.* Yes.

*Companies.* No.

## PURCHASE OF SUPPLIES.

H 43. Who placed the orders for materials and who governed the placing of orders?

*Municipalities.* The general manager with the approval of the tramway committee.

*London United.* Accountants department.

*Dublin.* Secretary and treasurer subject to the approval of the board of directors.

*Norwich.* General manager.

H 44. Were contracts advertised?

*Municipalities.* All municipal undertakings advertised for tenders for various materials likely to be required during the year. Tenders were accepted by the tramway committee.

*London United.* Tenders were invited from a selected number of firms, but contracts were not advertised.

*Dublin.* Advertisements were published and orders placed in Dublin.

*Norwich.* No contracts advertised.

H 45. What system was used to check the quality of materials and weights and measurements of shipments?

In all undertakings all materials were delivered into stores and checked as regards quantity and quality by the storekeeper, who reported to the offices so that invoices might be checked and passed.

H 46. What redress is there in case of shortages or poor quality of shipment?

In event of deficiency in quantity or quality a report is made to the office and payment is withheld until the matter has been rectified. In some cases there are further penalty clauses which may be enforced.

H 47. Were the dealers supplying materials connected with the public authorities in any way?

*Municipalities.* Under the acts of Parliament no member of a public body is allowed to trade with the public body to which he belongs.

*Companies.* No instance was found.

H 48. Were local dealers favored over those outside of the city?

*Municipalities.* No special preference was given to local dealers.

*London United.* No local preference.

*Dublin.* Irish dealers were favored on equal basis.

*Norwich.* Preference was given to local dealers.

H 49. Was there delay in placing orders after the engineer or superintendent expressed the necessity for supplies?

No instance of delay was found in any case.

H 50. In practice, did the manager get the types and makes of things he asked for, or was he forced to take something else?

No instance was found in any case where the manager's request was disregarded or overruled.

H 51. Were bills for materials purchased paid promptly?

In each instance it was reported that there was no delay.

## GENERAL MATTERS.

H 52. Is the system adequately equipped to handle business?

*Glasgow, Manchester, Liverpool.* Each system seems to be well handled and have ample equipment.

*London C. C.* Will be when reconstruction is completed.

*Companies.* Yes.

H 53. Is the equipment of modern and efficient type?

Yes, in each instance. The equipment is of the type ordinarily used in Great Britain, except that the L. C. C. system uses the conduit instead of the trolley.

H 54. Is it in good condition?

*Municipalities.* Yes. The equipment is good and repairs are carefully made. In Glasgow all cars are run into the repair shops once in every six weeks for ordinary light running repairs and overhauling, and once each year for a thorough overhauling, general repairs and painting.

*Companies.* Yes.

H 55. Will it be necessary to make extensive repairs or alterations in the near future?

No, except those ordinarily made from time to time.

H 56. Is the plant kept in clean and neat condition?

Yes, in each instance.

H 57. Are the works adequately ventilated?

Yes, in each instance.

H 58. Are the pits, shafts and machinery properly guarded?

Yes, in each instance.

H 59. Are the offices for payments, complaints and other business conveniently located?

Yes, in each instance. In Glasgow the central office is kept open day and night.

H 60. Were passengers' complaints promptly and efficiently attended to?

Yes, in each instance. Inspectors are usually kept for this purpose.

H 61. Were any places of amusement owned or maintained?

None, in any instance. Of course, every city owns and maintains various public parks, but none of these was under the control of the tramway undertaking or maintained in connection therewith.

H 62. Is there a system of badging or uniforming the employees so that they may be known to the public?

In every case the motormen and conductors were uniformed. The municipalities provide the uniforms without expense to the employees. The same was true of the London United and the Dublin companies. The Norwich company paid one-third of the cost and the employees two-thirds.

H 63. Is the general morale and discipline of the employees good, bad or indifferent?

In all cases the discipline of employees appeared excellent.

H 64. Are the employees who meet the public polite and attentive?

So far as could be learned all employees who came in contact with the public were polite and attentive.

H 65. Were they neatly dressed?

Yes, in each instance.

H 66. Do various departments work in harmony?

So far as could be learned there was complete harmony between the various departments.

H 67. Is there an adequate system of telephones?

Yes, in each case.

H 68. Are the works and offices properly watched at night?

Yes, in each case.

H 69. Is there any system of inspection to prevent workmen of other companies or city departments from injuring the underground structures?

*Glasgow, Liverpool.* No special provision was made.

*Manchester.* There were special inspectors for this purpose.

*London C. C.* ————

*Companies.* Special provision.

H 70. Was a drafting room maintained?

Yes, in each instance.

H 71. What system was in vogue to take care of the tools distributed to employees?

Tools were checked in and out of stores, and where the men were working in gangs the foreman was generally held responsible.

H 72. Were the different classes of workmen equipped with proper tools? Were the tools kept in order?

The workmen of each undertaking seemed to be properly equipped with the various classes of tools and they were apparently kept in good order.

# FINANCIAL MATTERS

## British Tramways

## (Schedule IV)

By E. HARTLEY TURNER and R. C. JAMES*

I 1. Data for year ending: Glasgow, May 31, 1905; Manchester, March 31, 1905; Liverpool, December 31, 1905; London C. C., March 31, 1905; London United, December 31, 1905; Dublin, December 31, 1905; Norwich, June 30, 1905.

I 2. Give rates of fares for last year. Average distances in miles at various rates of fare.

A. ORDINARY FARES.

| Fare. | Glasgow. | Manchester. | Liverpool. | London C. C.[1] | London United—London & Middlesex. | Surrey. | [2]Dublin. | Norwich. |
|---|---|---|---|---|---|---|---|---|
| ½d. | .58 | .72 | .... | .64 | .... | .... | .... | .... |
| 1d. | 2.30 | 2.10 | 2.40 | 1.85 | 2.07 | 1.84 | .... | 1.46 |
| 1½d. | 3.48 | 2.61 | .... | 2.62 | .... | .... | .... | About |
| 2d. | 4.59 | 3.34 | 4.38 | 4.05 | 4.17 | 3.70 | .... | 1 |
| 2½d. | 5.88 | 4.03 | .... | 4.80 | .... | .... | .... | mile |
| 3d. | 6.90 | 4.68 | 6.66 | 5.98 | 6.18 | 5.42 | .... | for |
| 3½d. | 8.11 | 5.43 | .... | .... | .... | .... | .... | 1d. |
| 4d. | 9.19 | 6.45 | 8.54 | .... | 8.80 | 7.21 | .... | |
| 4½d. | 10.15 | .... | .... | .... | .... | .... | .... | |
| 5d. | 10.77 | .... | 10.43 | .... | 10.16 | 8.90 | .... | |
| 5½d. | 11.59 | .... | .... | .... | .... | .... | .... | |
| 6d. | 12.93 | .... | .... | .... | 11.16 | .... | .... | |

B. WORKMEN'S FARES.

*Glasgow, Manchester, Liverpool.* Same as ordinary fares, and same cars are used.

*London C. C.* Workmen's fares charged in all cars reaching terminus before 8 A. M.; ordinary cars used in evening, rates, 1d.,

[1] The figures in this column are approximate only.

[2] No data available. About 1½ miles for 1d.

*All figures in these schedules relating to assets, liabilities, revenue, and profit and loss accounts, are prepared from the published accounts certified by the auditors. We have in all cases where further information was required obtained such details from the staff of the undertaking.

We have not in any case verified by personal examination the accuracy of the audited accounts, as we considered that in the short time at our disposal we should not have been able to do this with any completeness, even had we entrée to the books and original records.

For general comments and summary, see further report at the end of this volume.

3 to 6⅜ miles; 2d., 6 to 12¾ miles. Number of passengers carried during 1904-5, 9,898,289; receipts, £36,172; average fare, .89d.

*London United.* Special cars are run in the morning, ordinary cars used in evening. Average distances: 1d., 5.26 miles (single); 1d., 4.58 miles (return); 2d., 11.51 miles (single). Return tickets at double single rates are good for return at any time after noon. Number of passengers carried in 1905 was 1,721,739; receipts, £10,725; average fare, 1.49d.

*Dublin.* Special cars are run. Average distance, about 2½ miles for 1d. Number carried in 1905, 51,159, at the following rates: 1d., 39,747; 1½d., 11,397; 2d., 7; 3d., 8. Average fare, 1.11d.

*Norwich.* Special cars are run and tickets are available up to 8 A. M., between 1 and 2 P. M. and from 5:30 to 7:15 P. M. except after 2 P. M. on Saturdays; 12 tickets for 6d. Receipts in 1904-5 were £623.

### C. Scholars' Tickets.

*Glasgow.* Children traveling to and from school are allowed to ride at half fares, up to 15 years of age, but the minimum fare is ½d.

*Manchester, Liverpool.* ——

*London C. C.* No special rates.

*London United.* No special rates.

*Dublin.* Under 15 years, 25 per cent. discount. Tickets are sold and accepted at face value.

*Norwich.* Tickets, 12 for 6d. are available from 8:30 to 9 A. M., 12 to 12:30 P. M., 1 to 2:30 P. M. and 4:30 to 5 P. M., except on Saturdays, bank or school holidays. Receipts in 1904-5 were £133.

### Passengers Carried—Percentages.

| *Rates of Fare.* | *Glasgow.* | *Manchester.* | *Liverpool.* | *London C. C.* | *London United.* | *Dublin.* | *Norwich.* |
|---|---|---|---|---|---|---|---|
| ½ | 29.9 | 5.4 | .... | 36.0 | .... | .... | .... |
| 1 | 60.2 | 72.0 | 89.3 | 47.1 | 71.6 | 81.1 | 88.2 |
| 1½ | 6.7 | 11.0 | 1.0 | 9.1 | .... | .... | 6.8 |
| 2 | 1.9 | 7.1 | 9.1 | 5.0 | 21.1 | 14.7 | 4.3 |
| 2½ | .5 | 1.9 | .... | 1.2 | .... | .... | .4 |
| 3 | .6 | 1.6 | .4 | 1.6 | 3.1 | 1.8 | .3 |
| 3½ | .1 | .7 | .... | .... | .... | .... | .... |
| 4 | .1 | .3 | .1 | .... | 2.3 | .9 | .... |
| 4½ | .... | .... | .... | .... | .... | .... | .... |
| 5 | .... | .... | .... | .... | .8 | .1 | .... |
| 5½ | .... | .... | .... | .... | .... | .... | .... |
| 6 | .... | .... | .1 | .... | 1.1 | .... | .... |
| 8 | .... | .... | .... | .... | .... | .2 | .... |
| 10d.-3s. | .... | .... | .... | .... | .... | .... | .... |
| Howth thro passengers. | .... | .... | .... | .... | .... | .8 | .... |
| Return | .... | .... | .... | .... | .... | .2 | .... |
| Special, etc. | .... | .... | .... | .... | .... | .2 | .... |
| Total... | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

## Passengers Carried.

| *Rates of Fare.* | *Glasgow.* | *Manchester.* | *Liverpool.* | *London C. C.* | *London United.* | *Dublin.* | *Norwich.* |
|---|---|---|---|---|---|---|---|
| ½ | 58,540,026 | 6,861,870 | ..... | 59,271,054 | ..... | ..... | ..... |
| 1 | 117,897,392 | 91,281,804 | 106,353,445 | 77,630,045 | 35,195,348 | 40,863,324 | 6,538,168 |
| 1½ | 13,100,122 | 13,979,057 | 1,231,422 | 15,036,988 | ..... | 11,397 | 501,624 |
| 2 | 3,648,196 | 9,021,269 | 10,799,346 | 8,261,892 | 10,412,097 | 7,422,287 | 319,806 |
| 2½ | 1,024,047 | 2,411,352 | ..... | 1,946,256 | ..... | ..... | 28,848 |
| 3 | 1,235,246 | 2,018,827 | 532,814 | 2,671,125 | 1,476,519 | 892,098 | 20,680 |
| 3½ | 241,241 | 888,500 | ..... | ..... | ..... | ..... | ..... |
| 4 | 81,249 | 437,596 | 115,302 | ..... | 1,130,867 | 419,788 | ..... |
| 4½ | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 5 | ..... | ..... | 2,976 | ..... | 406,109 | 55,439 | ..... |
| 5½ | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 6 | ..... | ..... | 88,339 | ..... | 536,955 | ..... | ..... |
| 8 | ..... | ..... | ..... | ..... | ..... | 103,485 | ..... |
| 10d.-3s. | ..... | ..... | ..... | ..... | ..... | 5,835 | ..... |
| Howth thro passengers | ..... | ..... | ..... | ..... | ..... | 420,876 | ..... |
| Return | ..... | ..... | ..... | ..... | ..... | 108,761 | ..... |
| Special, etc. | ..... | ..... | ..... | ..... | ..... | 95,777 | ..... |
| Total | 195,767,519 | 126,900,875 | 119,123,644 | 164,818,560 | 49,157,895 | 50,399,067 | 7,409,126 |

## Traffic Receipts.

| *Rates of Fare.* | *Glasgow.* | | *Manchester.* | | *Liverpool.* | | *London C. C.* | | *London United.* | | *Dublin.* | | *Norwich.* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Amount. | % | Amount. | % | Amount. | % | Amount. | % | Amount. | % | Amount. | % | Amount. | % |
| ½..... | £121,958 | 16.1 | £14,296 | 2.3 | ..... | ... | £123,483 | 18.6 | ..... | ... | ..... | ... | ..... | ... |
| 1..... | 491,239 | 64.9 | 380,341 | 60.5 | £443,139 | ... | 323,461 | 48.8 | £146,647 | 50.1 | £170,264 | 65.9 | £27,242 | 81.1 |
| 1½..... | 81,876 | 10.8 | 87,373 | 13.9 | 7,696 | ... | 93,981 | 14.2 | ..... | ... | 71 | ... | 3,135 | 9.3 |
| 2..... | 30,402 | 4.0 | 75,177 | 11.9 | 89,997 | ... | 68,849 | 10.4 | 86,767 | 29.7 | 61,852 | 24.0 | 2,665 | 7.9 |
| 2½..... | 10,667 | 1.4 | 25,118 | 4.0 | ..... | ... | 20,273 | 3.0 | ..... | ... | ..... | ... | 301 | .9 |
| 3..... | 15,441 | 2.1 | 25,235 | 4.0 | 6,660 | ... | 33,389 | 5.0 | 18,457 | 6.3 | 11,151 | 4.3 | 259 | .8 |
| 3½..... | 3,518 | .5 | 12,957 | 2.1 | ..... | ... | ..... | ... | ..... | ... | ..... | ... | ..... | ... |
| 4..... | 1,354 | .2 | 7,293 | 1.2 | 1,921 | ... | ..... | ... | 18,848 | 6.4 | 6,997 | 2.7 | ..... | ... |
| 4½..... | ..... | ... | ..... | ... | ..... | ... | ..... | ... | ..... | ... | ..... | ... | ..... | ... |
| 5..... | ..... | ... | ..... | ... | 62 | ... | ..... | ... | 8,461 | 2.9 | 1,155 | .5 | ..... | ... |
| 5½..... | ..... | ... | ..... | ... | ..... | ... | ..... | ... | ..... | ... | ..... | ... | ..... | ... |
| 6..... | ..... | ... | ..... | ... | 2,208 | ... | ..... | ... | 13,424 | 4.6 | ..... | ... | ..... | ... |
| 8..... | ..... | ... | ..... | ... | ..... | ... | ..... | ... | ..... | ... | 3,450 | 1.4 | ..... | ... |
| 10d.-3s..... | ..... | ... | ..... | ... | ..... | ... | ..... | ... | ..... | ... | 312 | .1 | ..... | ... |
| Howth thro passengers.. | ..... | ... | ..... | ... | ..... | ... | ..... | ... | ..... | ... | 2,410 | .9 | ..... | ... |
| Return..... | ..... | ... | ..... | ... | ..... | ... | ..... | ... | ..... | ... | ..... | ... | ..... | ... |
| Special, etc.... | ..... | ... | ..... | ... | ..... | ... | ..... | ... | ..... | ... | 557 | .2 | ..... | ... |
| Misc..... | 25 | ... | 739 | .1 | *1,599*[1] | ... | *341*[1] | ... | ..... | ... | ..... | ... | ... | ... |
| Total..... | £756,480 | 100.0 | £628,529 | 100.0 | £550,084 | ... | £663,095 | 100.0 | £292,604 | 100.0 | £258,219 | 100.0 | £33,602 | 100.0 |

Note [1]—Less conductors' shorts, special cars, etc.

I 3. State conditions upon which transfers were given.

No transfers were given by any undertaking, except at Norwich, where a sort of zone system was in force. If one has to change cars to complete his journey, a transfer may be had upon application when the fare is paid, provided, of course, the required fare for the full distance is paid when the transfer is asked for.

I 4. Summarize charges for freight and express service.

*Glasgow, Liverpool, London C. C.* No service.

*Manchester.* Parcels are collected and delivered anywhere within the cities of Manchester and Salford and part of Stretford at the following rates:

| | | | |
|---|---|---|---|
| Up to 14 lbs. weight..... | 2d. | Up to 56 lbs. weight..... | 4d. |
| Up to 28 lbs. weight..... | 3d. | Up to 112 lbs. weight..... | 6d. |

The rates outside of this area, to and from any point in some 66 districts including all the large towns in the neighborhood of Manchester except Bolton, and extending some 11 miles to the north, eight miles to the east, nine miles to the south and six miles to the west of the center of Manchester, were:

| | | | |
|---|---|---|---|
| Up to 14 lbs. weight..... | 3d. | Up to 56 lbs. weight..... | 6d. |
| Up to 28 lbs. weight..... | 4d. | Up to 112 lbs. weight..... | 8d. |

Breakable articles are carried at the ordinary rates if at the risk of the owners and at double these rates if at the risk of the department. Parcels are called for or may be left at any one of the 150 depots.

*London United.* No service.

*Dublin.* Parcels are collected and delivered anywhere within the city and within 1 mile of any of the company's ten stations outside of Dublin, comprising a circular area with a radius of not quite four miles, at the following rates:

| | | | |
|---|---|---|---|
| Up to 4 lbs. weight..... | 2d. | Up to 56 lbs. weight..... | 6d. |
| Up to 14 lbs. weight..... | 3d. | Up to 84 lbs. weight..... | 9d. |
| Up to 28 lbs. weight..... | 4d. | Up to 112 lbs. weight..... | 1s. |
| Up to 42 lbs. weight..... | 5d. | | |

A special rate for traders' light goods from 56 to 84 lbs. of 7d. and from 84 to 112 lbs. of 8d. is charged. Laundry baskets over 56 lbs., 6d., half rate extra for frail or breakable articles. For delivery beyond one mile from the company's stations, 2d. per parcel per half mile up to 28 lbs. and 4d. per half mile up to 56 lbs. is charged, but no parcel will be delivered beyond two miles, nor can punctual delivery outside of the one mile distance be guaranteed. Parcels are called for or may be given to street car conductors. The profit last year was £3,000.

*Norwich.* The business is very small. Total receipts were only £112 last year.

I 5. Summarize mail contracts.

*Municipalities.* None.

*London United, Norwich.* None.

*Dublin.* No contract, but the company received £63 in 1905 from a private company for carrying mails.

I 6. If fares were altered between January 1, 1900, and 1906, give changes.

*Glasgow.* Average distance at various fares, in miles:

| *Fares.* | 1900. | *Since* 1902. | *Fares.* | 1900. | *Since* 1902. |
|---|---|---|---|---|---|
| ½d | .58 | .58 | 3½d | .... | 8.11 |
| 1d | 1.75 | 2.30 | 4d | .... | 9.19 |
| 1½d | 2.31 | 3.48 | 4½d | .... | 10.15 |
| 2d | 3.49 | 4.59 | 5d | .... | 10.77 |
| 2½d | 4.12 | 5.88 | 5½d | .... | 11.59 |
| 3d | 5.20 | 6.90 | 6d | .... | 12.93 |

*Manchester.* A general reorganization of the fares and stages took place in October, 1903. Intermediate stages at 1½d., 2½d. and 3½d. were introduced all over the system, and the distances lengthened for the other fares. The general effect was in favor of the traveling public.

*Liverpool.* Reduction between 1897 and 1899 would be between one-half and two-thirds of the original fares.

*London C. C.*

*London United.* Slight increases in distance carried; fares were not materially altered.

*Dublin, Norwich.* No changes.

I 7. Was the reduction voluntary, the result of law or ordinance or competition?

Voluntary in each instance, but perhaps due in part to competition.

I 8. If plant has undergone a change from private to public management, or vice versa, give fares and distances just before and just after change, with dates.

*Glasgow.* The working of the tramways was taken over by the city council on July 1, 1894. The fares charged by the company just before and by the city just after the change were:

| *Company—* *Distance in Miles.* | *Fares.* | *Municipality—* *Distance in Miles.* |
|---|---|---|
| .... | ½d. | .58 |
| 1.12 | 1 d. | 1.17 |
| 1.80 | 1½d. | 1.80 |
| 2.20 | 2 d. | 2.28 |
| .... | 2½d. | 2.81 |
| 3.23 | 3 d. | 3.41 |

Average fare per mile, company..... 0.89d.
" " " " city ..... 0.46d.

*Manchester.* A comparison of the average distances traversed for the various rates of fares is as follows:

| *Company—Distance in Miles.* *Inside.* | *Outside.* | *Fares.* | *Municipality—Distance in Miles.* *Inside or Outside.* |
|---|---|---|---|
| .... | .... | ½d. | .72 |
| 1.08 | 1.21 | 1 d. | 2.10 |
| .... | .... | 1½d. | 2.61 |
| 2.06 | 2.23 | 2 d. | 3.34 |
| .... | .... | 2½d. | 4.03 |
| 3.08 | 3.08 | 3 d. | 4.68 |
| .... | .... | 3½d. | 5.43 |
| 4.30 | 6.06 | 4 d. | 6.45 |
| 5.38 | .... | 5 d. | .... |
| 6.29 | .... | 6 d. | .... |

The company ceased running cars in the Manchester area March 31, 1903. A general reorganization of the fares and stages was made in October, 1903.

*Liverpool.* Reduction between 1897 and 1899 would be between one-half and two-thirds of the original fares. Average fare per passenger up to 1897 was about 2d., but the stages have been lengthened so that comparison is very difficult. Change from company to municipal operation was made in 1897.

*London C. C.* Many alterations have been made both in fares and distances since January 1, 1899, when lines were taken over.

*Companies.* Inquiry not applicable.

I 9. What system of accounts was used during last fiscal year?

*Municipalities.* The standard form approved by the Municipal Tramways Association of Great Britain and the Institute of Municipal Treasurers and Accountants, except at Liverpool, where certain modifications were in vogue.

*London United.* Ditto.

*Dublin.* The form prescribed by the Railway Clauses Consolidation Act of 1868.

*Norwich.* A form drawn up by the manager of the company, very similar to the form used in this schedule.

I 10. By whom were the accounts audited?

*Glasgow.* A professional firm of chartered accountants: Messrs. Kerr, Andersons & MacLeod, Glasgow.

*Manchester.* Messrs. Butcher, Litton and Pownall, chartered accountants, Manchester; and the elective and mayor's auditors.

*Liverpool.* There was a continuous audit conducted by the controller and auditor of accounts. In addition there were also audits by a firm of chartered accountants, and by the elective and mayor's auditors, who were chartered accountants.

*London C. C.* An auditor of the Local Government Board.

*London United.* Solomon Hare, chartered accountant.

*Dublin.* Articles of association provide for the appointment of two auditors one of whom must be a shareholder. Sir Robert Gardiner, one of the auditors, is a shareholder.

*Norwich.* F. S. Culley, chartered accountant, Norwich.

I 11. Who paid for this auditing?

*Glasgow, London C. C.* Tramways department.

*Manchester.* The City of Manchester out of the city fund.

*Liverpool.* Municipality. See also inquiry I 21.

*Companies.* The company in each case.

I 12. Who selected the auditor?

*Municipalities.* The elective auditors are chosen by the city council; the mayor's auditor is appointed by the mayor. The professional auditors are selected by the city council also, except in London, where the Local Government Board appoints.

*Companies.* The shareholders in general meeting.

I 13. Was each item charged to the proper account?

Yes, in each instance.

I 14. What provision was there for assuring that each item was properly charged?

Besides the audit prescribed under inquiry I 10:

*Glasgow.* All accounts were carefully allocated by an experienced clerk and were thereafter checked by the accountant. All capital expenditure was certified by the head of the department incurring the expense.

*Manchester.* The provision of a proper method of analysis and the supervision of the actual analysis by responsible officials.

*Liverpool.* Primarily by the executive office, checked by the audit staff.

*London C. C.* The usual internal control supervised by the accountants' department.

*London United.* The store room system is an admirable one, and a staff of clerks was engaged entirely on the work. There was a practical supervision by the management and the auditor of the company.

*Dublin.* All purchases were verified by responsible officials and the secretary and accountant supervised the method of charging the same to the proper account.

*Norwich.* A proper scrutiny of all purchases by responsible officials, supervised by the accountants' department.

I 15. Were the accounts of the particular plant kept separate from all others and from the general accounts of the city?

Yes, in each instance. In the case of the London C. C. tramways separate accounts were kept of the construction and operation of the Northern and Southern systems, and in the case of the South-

ern system as between horse and electric traction. In addition to the outlay upon the Northern and Southern systems, the Council has expended £474,715 up to March 31, 1905, upon the purchase of land, the erection of the western and eastern generating stations, tramway subway under Kingsway and street improvements. This expenditure, which has been since considerably increased, has not been allocated to either the Northern or Southern systems as at present worked. No revenue has been received in respect to this outlay to March 31, 1905.

I 16. As regards taxes, fire insurance, boiler insurance, water rents of land and buildings not owned but used, interest on loan debt and other liabilities, were the expenses charged in the books of the undertaking and included in the financial returns?

The accounts of each plant were charged with the amounts spent.

I 17. As regards accident insurance and payments for claims and damages, were the expenses charged in the books of the undertaking and included in the financial returns?

The accounts of each plant were charged with the amounts expended, but some took out the ordinary insurance policy, while others did their own insuring.

I 18. As to transportation for employees, was the cost charged in the books of the undertaking and included in the financial returns?

No, in no instance, except in the London C. C. system. See also I 22.

I 19. Were charges made for "depreciation" in the books of the undertaking and included in the financial returns?

In this connection, it is advisable to consider not only the ordinary charges for repairs and maintenance, but payments out of revenue to sinking and reserve funds, and in aid of rates—taxes—as well as depreciation funds. Sinking funds will be considered under I 20, the others will be treated here.

#### I—Payments to Depreciation and Reserve Funds.

*Glasgow.* Previous to the year ending May 31, 1905, the tramways department treated the capital account in the same way as did the gas department, inasmuch as they deducted the depreciation charged to revenue account from the capital expenditures shown in the balance sheet. In May, 1905, the committee decided to issue the accounts in accordance with the standard form adopted for municipal tramways. In consequence of this decision, the accounts of the tramway undertaking to May, 1905, show on the assets side of the balance sheet the full capital expenditures and on the liabilities side the amount of the fund set aside to meet depreciation. This fund has been built up by annual contributions out of revenue at fixed rates per cent. and amounts of £777,637. In the

case of permanent way, the yearly contribution was £450 (since increased to £500) per mile of single track; electric equipment 3 1/3 per cent.; buildings and fixtures, 2½ per cent.; power station plant, 5 per cent.; cars and electrical equipment, machinery and tools, and miscellaneous equipment, 7½ per cent.—a total of £153,292 for 1904-5. These were the rates charged for the year ending May 31, 1905. The rates for previous years can all be ascertained from the published accounts of the undertaking.

In addition to these regular rates the undertaking has set aside a special depreciation fund which is arrived at by transferring round sums from the surplus revenue as profits allow. At May 31, 1905, this special depreciation amounted to £68,500. The municipality has expended the sum of £287,036 on actual renewals out of the depreciation fund above created. Full provision has been made out of revenue for obsolete plant, and in this case we would specially mention that the whole cost of temporary equipment for horse traction amounting to £186,637, has been written off out of revenue. The total amount expended under the head of parliamentary charges is £15,857, of which there has been written off out of profits the sum of £13,756, leaving a balance of £2,101, which is included in the capital outlay.

In addition to the depreciation fund of £777,637 already referred to, this department has accumulated a reserve fund of £32,590, which has been provided out of surplus profits. It is not specifically invested, but has been used in extending the works.

| | | |
|---|---|---|
| The total amount set aside out of revenue from 1896 to 1905 has been | | £353,018 |
| Increased by proceeds of sale of horses and obsolete plant | | 2,662 |
| Total | | £355,680 |

This has been applied as follows:

| | | |
|---|---|---|
| In paying a proportion of the expenses of municipal buildings for two years in 1899 | £1,000 | |
| Transfer to permanent way renewals fund | 190,000 | |
| Amount expended on alterations in 1902 and 1905 | 70,588 | |
| In writing off outlay on the old horse traction plant and preliminary expenses | 61,502 | |
| | | £323,090 |
| Leaving a balance carried forward as above of | | £32,590 |

With regard to the investment of the depreciation and reserve funds of this department, we would make the following remarks: The depreciation and permanent way renewal fund, together with the general reserve fund, both of which we have referred to above, amounts to £810,227

This is represented by:

| | |
|---|---|
| Loan to the Corporation of Govan | £10,000 |
| Invested in the Common Good of the Glasgow Corporation | 157,000 |

| | | |
|---|---|---|
| Employed as working capital | £76,096 | |
| Expended on cars and alterations in course of construction | 36,108 | |
| | | £279,204 |
| The remainder | | £531,023 |

has been used in building and equipping the plant.

With regard to the last application of these funds we would point out that this is only a temporary use of these reserve funds seeing that the city has unexercised borrowing powers amounting to £467,642. Instead of borrowing this amount and increasing their sinking fund charges, they have utilized their cash reserves in capital outlay until such times as the reserves are required for their proper purpose, when the borrowing powers will be exercised and the money so raised will be applied in carrying out the required renewals of permanent way and other plant.

*Manchester.* The capital outlay of the undertaking purchased from the old Carriage Company is included in the balance sheet as £263,158. The old track which was leased to the Carriage Company is included in the outlay at the amount of £20,819, representing the outstanding loans which have not been provided by means of sinking fund, although it has all been repaid. This amount is being written off out of revenue, as the loans are repaid. During the lease the municipality received by way of rent a sum sufficient to pay the interest and sinking fund on the debt incurred for this purpose. The amount of sinking fund so supplied has been written off the capital outlay, reducing it to the above sum.

The balance to the credit of the renewals and depreciation fund at the end of 1904-5 was £185,086, represented by cash in bank and working capital; £70,907 were set aside out of revenue for that year. Current repairs were paid out of revenue.

*Liverpool.* The balance to the credit of the reserve, renewal and depreciation fund at the end of 1905 was £271,019, represented by a loan of £100,000 to the water department, working capital and cash in bank. The statement is as follows:

| | | |
|---|---|---|
| Total amount set aside to December 31, 1904 | | £236,697 |
| Add for year ended December 31, 1905 | | 50,639 |
| | | £287,336 |
| Deduct: Electric welding of tramway lines | £7,667 | |
| Alterations of lines | 8,650 | |
| | | 16,317 |
| Amount stated above | | £271,019 |
| The published accounts show this amount reduced by the outlay on Hatton Garden and Litherland properties which we have included in capital outlay, viz | | 56,620 |
| Amount as per published accounts | | £214,399 |

Since this fund was established no charges have been made against it for renewals, except the above item of £16,317. All renewals have been charged to current revenue.

*London C. C.* The balance to the credit of renewals reserve fund at the end of 1904-5 was £66,607, represented by investments of £31,541 in 3 per cent consolidated stock of the London County Council, and working capital; £35,000 were set aside out of revenue for that year, besides costs of ordinary repairs.

In this connection it is important to point out that during the conversion of the horse system to electric traction, it was necessary to erect temporary stations at a cost of £25,203, which has been entirely written off out of revenue. Further provision in this respect will have to be made when certain temporary car sheds are closed. On conversion also the horses were sold and any loss under this heading has been charged to revenue account.

As to parliamentary expenses, the costs of the bill of 1903 have been written off out of profits, and two-thirds of the costs of the Bill of 1904 have also been provided for in the same way.

*Companies.* It is not the practice for the companies to charge the revenue account with any definite rates of depreciation, which is provided for by charging all renewals to the year's revenue account as and when made.

*London United.* This company has accumulated a reserve of £15,000 by transfers from surplus profits and by a premium of £3,750 received in respect of new preference shares. It is not specifically invested but is represented by the general assets of the company. The object of this fund is to provide for depreciation and renewals. Subject to the control of the shareholders, there is no limit to the amount which may be set aside; £10,000 were set aside out of revenue for the last year.

*Dublin.* The company has improved their track at various times by laying down heavier rails and by the conversion from horse to electric traction. All this expenditure has been charged to revenue account except that portion which is represented by improvements effected to equip the lines for electric traction.

The following fund has been accumulated: Reserve fund, £21,000; accident insurance reserve, £3,000; maintenance fund, £2,500; total, £26,500. These have been provided out of surplus profits and have been invested to the extent of £1,900. The interest on these investments is credited to the net revenue account.

This company has made a special reserve which we think should be specially mentioned. In 1905 they issued £300,000 of "B" debenture stock at a discount. This discount amounted to £24,704 and the stock is redeemable at par in 1938. To provide for this discount on the redemption of the stock, they have taken out a policy of insurance upon which they pay an annual premium of £388. This premium has been regularly charged against the profits for each year, but the company has not included in its assets any sum representing the present value of the policy. We

have calculated this on a 2¾ per cent. basis, which gives a present value of about £3,400. Although this is not included in the assets in the balance sheet, we have added it to the assets in the statement in the schedule and deducted it from the amount appearing in the balance sheet as discount on the "B" debenture stock.

*Norwich.* This company has set aside a reserve fund amounting to £4,197, which has been provided out of surplus profits. It is invested specifically at call and the resulting interest is credited to the net revenue account.

**II—Payments in Aid of Rates—Taxes.**

The amount paid over in aid of rates is as much an application of surplus profits as the provision of a reserve fund. The reserve fund appears in the accounts of the undertaking, but profit applied in aid of rate is not generally shown in the accounts and then only as a memorandum. The following table summarizes the facts:

| *Towns.* | *Total Amount.* | *Years.* | *Annual Average.* | *Year Under Review.* | *How Applied.* |
|---|---|---|---|---|---|
| Glasgow ..... | £156,760 | 11 | £14,250 | £25.000 | To Common Good[1] |
| Manchester... | (?) | (?) | (?) | 51,000 | Note[2] |
| Liverpool[3].... | 127,283 | 5 | 25,456 | 25,320 | General purposes |
| London C. C.[4] | 39,600 | 5 | 7,920 | ..... | General purposes |

I 20. Were payments to sinking funds charged in the books of the undertaking and included in the financial returns?

Mr. Turner has had considerable experience in connection with municipal sinking funds, and we can assure the Commission that the figures as given in the published accounts are absolutely reliable apart altogether from the question of the audit of the

[1] The department does not contribute anything directly to the general rate, but makes an annual payment to the Common Good. This is an indirect benefit to the rate of the city. The contributions have been steadily increasing:

| | |
|---|---|
| 1894-5—1 year | £8,260 |
| 1895-6 to 1898-9—4 years | 9,000 |
| 1899-00 to 1901-2—3 years | 12,500 |
| 1902-3 to 1904-5—3 years | 25,000 |
| 1905-6—1 year | 35,000 |

[2] Of the £51,000 contributed in 1904-5, £46,000 were out of the current year's profits, and £5,000 were transferred from reserve fund. All was applied in aid of the general rate of the city.

[3] The special Act of 1897 prohibited the municipality applying any portion of the profits in aid of rate until 1912, but in 1902, Parliament authorized the transfer of net profits in excess of £30,000 in relief of rates with a limit of one-third. The amounts transferred were £17,007 for 1901, £25,166 for 1902, £32,081 for 1903, £27,109 for 1904, and £25,320 for 1905. The act was not passed until 1902, but the amount just given was set aside in 1901, although not actually paid over until authority had been given. Besides there were large sums set aside prior to 1897.

[4] The figures here given are for the Southern system only, and do not include the large sums paid in aid of rates from the Northern system. The total amount here given was contributed in three years, 1899-1900, 1900-1 and 1901-2. As the following pages will show, there was an unappropriated balance for the year 1904-5 of £7,054.

accounts. Also it is quite impossible for any municipality to employ any part of its sinking fund in providing capital or in any manner other than its legitimate purposes, namely the repayment of loan debt. Any part of the sinking fund not so applied must be represented either by cash in the bank or invested in outside securities or, where permitted by statute, invested in the authorized loans of the same municipality, as at Liverpool—the only municipality of the ones here treated which has any considerable amount in its sinking fund unapplied. Manchester has £378 of sinking fund unapplied represented by cash in bank. It should be borne in mind, however, that the sinking fund may not be invested in any other department of the same municipality unless that department has obtained statutory powers to borrow the amount and is therefore under a statutory obligation to set aside out of revenue a sinking fund for its redemption.

*Municipalities.* The statutory provisions outlined under inquiry D 25 *supra* have been obeyed in each instance. See J 3.

*Companies.* No sinking fund obligations in any instance.

I 21. Were there any charges which should properly be included in expenses but which were actually paid from other sources and not charged to the plant, such as the services of the town clerk, treasurer, etc.?

*Glasgow.* No; £400 were charged in respect of town clerk's services.

*Manchester.* The tramways department has its own administrative and financial staff, and bears the cost thereof. The services rendered by the treasurer are comparatively unimportant. The undertaking does not contribute towards the salaries and expenses of the town clerk, city surveyor, city treasurer, city architect or professional auditors. The estimated value of this free service is £500.

*Liverpool.* Yes: the undertaking contributes £2,000 per annum to the salaries and expenses of general officers charged to city fund.

*London C. C.* All expenses applicable to tramways are charged against tramways account.

*Companies.* No items omitted.

I 22. Were there any items which should be credited to the income account, which were not so credited, such as free transportation to firemen, employees or other persons?

*Glasgow.* All corporation tramway employees in uniform are allowed to travel free on cars going to and from work. Tokens are given to other employees of the department and each account is charged with the expenses. No record was kept of the amount or value of the free service.

*Manchester.* The traffic staff generally, if traveling to or from their work and if in uniform, were allowed to ride free. No

entry was made in the accounts. The approximate value of this free service was £6,000.

*Liverpool.* Passes were issued free to servants in uniform, officials, policemen and four or five active members of the committee. The number issued during the past year was as follows:

| | |
|---|---|
| Servants | 45,074 |
| Police | 24,000 |
| Official | 12,615 |
| Committee | 2,450 |
| Total | 84,139 |

No entry was made of the value in the accounts. Departmental tickets were sold to the water, electric supply and lighting departments.

*London C. C.* All employees are entitled to a 2d. token per day, provided they live one mile or over from work. This enables them to obtain a 2d. workman's return ticket. Metal arm badges are also issued as passes on the cars. The approximate value of the whole of the free service was £1,293 and was credited to traffic receipts and debited to general expenses.

*London United.* Free transportation was given to employees in uniform, and a few complimentary passes have been issued by the directors and managers. The approximate value was small and could not be ascertained. No entry was made in the books.

*Dublin.* Officials in uniform going to and from work were allowed to travel free. In addition complimentary passes were given to outside individuals, but the value of this free transport was very small in amount and no record was kept in any way.

*Norwich.* Free transportation was given to policemen in uniform, detectives not in uniform, the city engineer and three foremen and employees of the company in uniform going to and from work. This free service was rendered voluntarily by the company, and no record was kept of the amount or value.

I 23. Was there a storeroom account to which materials were charged when purchased?

*Glasgow.* No material was issued from store unless the official requisition form signed by the foreman in charge of the work was presented to the storekeeper. All goods issued from store were accompanied by an official dispatch note showing the nature of the material and the account chargeable.

*Manchester.* Stores were issued on certified requisitions only. These requisitions stated the purpose for which stores were required, generally by means of a job number. These requisitions were afterwards summarized, the totals being posted to the various accounts.

*Liverpool.* Charged out on written authority of superintendent or other responsible official.

*London C. C.* All stores were charged to the head of service benefited by their use.

*Companies.* All goods issued from store were signed for by responsible officials and charged to the proper account.

I 24. How did the rate of interest paid by the city compare with the rate paid by private public service companies?

| *Towns.* | *Rate Paid by City.* | *Rate Paid by Companies.* | *City Lower than Company.* |
|---|---|---|---|
| Glasgow | About 3 p. c. | 4 p. c. | 1 p. c. |
| Manchester | Below 3½ p. c. | 4 p. c. | Over ½ p. c. |
| Liverpool | About 3¼ p. c. | 4 p. c. | Over ¼ p. c. |
| London C. C. | 3¼-3½ p. c. | 4-4½ p. c. | ¾-1 p. c. |
| London United | 3¼-3½ p. c. | 4-4½ p. c. | ¾-1 p. c. |
| Dublin | About 3½ p. c. | About 3½ p. c. | ..... |
| Norwich | 3+ p. c. | 4 p. c. | 1 p. c. |

I 25. What is the amount of the bonds or other liabilities of the plant cancelled since it began operation?

| | *Liabilities Redeemed.* | *Sink Fund Unapplied.* | *Total.* |
|---|---|---|---|
| *Glasgow* | £449,275 | ..... | £449,275 |
| *Manchester*[1] | 74,150 | £378 | 74,528 |
| *Liverpool* | 202,728 | 233,816 | 436,544 |
| *London C. C.*[2] | 208,364 | ..... | 208,364 |
| *Companies* | ..... | ..... | ..... |

I 26. In construction work, has a detailed record been kept of expenditures, so that the amount spent to date is known?

Yes, in each instance.

I 27. Have records been kept so that it is known that the total cost will exceed the appropriation before the indebtedness for the excess is incurred?

Yes, in each instance.

I 28. Coal used during last year (ton = 2,240 lbs.).

| *Towns.* | *Kind.* | *Price.* | *Tons.* |
|---|---|---|---|
| Glasgow | Bituminous washed singles | 6/4.814 | 35,267 |
| Manchester[3] | Bituminous slack | 9/4.11 | 78,166 |
| Liverpool[3] | Lancashire slack | 6/10.5 | 85,502 |
| London C. C. | See note[4] | ..... | ..... |
| London United | Derbyshire wash nuts | 12/3 | 22,537 |
| Dublin | Scotch bituminous | 10/11 | 16,432 |
| Norwich | Staffordshire bituminous | 13/10 | 3,822 |

[1] These figures are merely for the undertaking as now operated by the city and as it stands upon the books at present, and do not include the old system. The item of £74,150 includes £6,829 in respect of the old plant, and that of £378, £28 likewise.

[2] Besides this amount, which applies only to the Southern system, liabilities to the extent of £117,045 for the Northern system and of £9,829 for general purposes have also been paid off.

[3] The tramway departments of Manchester and Liverpool do not generate current; they buy it from the electricity departments. These figures are taken from Electric Supply Schedule IV., inquiry I 36.

[4] Current and steam were purchased from private companies as a temporary measure while the power plant was being constructed.

I 29. Give quantity and cost of water used.

| *Towns.* | *Quantity (gallons).* | *Cost per 100,000 gals.* | *Total Cost.* |
|---|---|---|---|
| Glasgow | 45,933,700 | £1 13s. 4d. | £679 |
| Manchester | See note [2] to inquiry I 28 | | .... |
| Liverpool | See note [3] to inquiry I 28 | | .... |
| London C. C. | See note [4] to inquiry I 28 | | .... |
| London United | 26,946,900 | £2 10s. | 672 |
| Dublin [1] | 9,810,000 | £2 10s. | 546 |
| Norwich | Pumped from the River | | |

## J—SHARE AND LOAN CAPITAL.

J 1. Share capital.

*Municipalities.* Have no share capital.

| *Amounts.* | *London United.* | *Dublin.* | *Norwich.* |
|---|---|---|---|
| Authorized | £2,500,000 | £1,200,000 | £264,000 |
| Called up | 2,010,042 | 1,200,000 | 264,000 |
| Uncalled | 239,958 | ..... | ..... |
| Fully paid | 2,010,042 | 1,200,000 | 264,000 |
| No. of shareholders | 2,500 | 5,000 | 9 |

J 2. Explain how share capital was issued.

*London United.*—The authorized share capital consists of:

| | |
|---|---|
| 125,000 ordinary shares of £10 each | £1,250,000 |
| 125,000 preference shares of £10 each | 1,250,000 |
| | £2,500,000 |

The called up capital consists of:

| | |
|---|---|
| 60,007 ordinary shares of £10 each, fully paid | £600,070 |
| 39,993 ordinary shares of £10 each, £4 paid | 159,972 |
| | £760,042 |
| 125,000 5% preference shares of £10 each, fully paid | 1,250,000 |
| | £2,010,042 |

The original issue of shares was made by prospectus; part was allotted to the vendor company at par. Subsequent issues have been made to the existing holders *pro rata*. Of the 100,000 ordinary shares issued 12,000 are held publicly. The remainder are held by the underground electric railways.

The company issued to the vendor company in 1901 ordinary capital stock of the nominal value of £600,000 in payment of goodwill included in the sale. We have treated this as a discount on the ordinary capital stock.

*Dublin.* The total capital of the company as authorized by the memorandum and articles of association of the company is £1,200,000, divided into 120,000 shares of £10 each. This is divided into 60,000 shares bearing a preferential dividend of 6% and 60,000 ordinary shares of £10 each. The original capital

[1] The figure here given for the amount of water used is only the quantity used at the Ringsend power station. Water for condensing is supplied free by the Grand Canal Co. Water for traffic purposes cost £301 of the total given.

was issued by prospectus in 1876. Since that date the share capital has been issued to shareholders in other companies whose undertakings have been purchased by this company.

| | |
|---|---|
| This company converted its share capital in 1881 and 1896 and added on conversion a nominal amount of | £126,000 |
| It also paid in 1896 on the purchase of the Dublin Southern District Company a premium in shares of ..... | 33,229 |
| | £159,229 |
| In addition to the above premiums the company issued its B. debenture stock at a discount in respect of which they have taken out a policy of insurance which is dealt with fully under I 19..... | 24,704 |
| | £183,933 |

These amounts are not shown separately on the assets side of the balance sheet, but are included in the item of capital outlay. We have, however, shown them separately in the statement of assets in this schedule.

*Norwich.* The whole of the share capital was taken up by the promoters—the New General Traction Company, Limited—and no prospectus was issued or any shares offered to the public. The shares were issued at par.

J 3. Loan capital. (Debenture stock or mortgages are analagous to bonds in the United States.)

| *Towns.* | *Authorized.* | *Issued.* | *Paid Off.* | *Out-standing.* |
|---|---|---|---|---|
| Glasgow ..... | £2,700,000 | £2,232,358 | £449,275 | £1,783,083 |
| Manchester[1] ..... | 1,971,206 | 1,550,874 | 67,321 | 1,483,553 |
| Liverpool ..... | (?) | 1,869,130 | 202,728 | 1,666,402 |
| London C. C.[2]..... | Note[3] | 2,415,329 | 208,364 | 2,206,965 |
| London United..... | 2,500,000 | 1,331,000 | ..... | 1,331,000 |
| Dublin ..... | 812,000 | 812,000 | ..... | 812,000 |
| Norwich ..... | 66,000 | 66,000 | ..... | 66,000 |

[1] The figures here given are only for the present system and do not include the amount of loan debt authorized, issued and paid off in connection with the old horse car lines owned by the city. The figures for the present undertaking *including* the part of the old still kept on the books would be, respectively, £1,999,131, £1,578,799, £74,150 and £1,504,649 (see 25 and J 8).

[2] The amounts actually borrowed and paid off are in excess of the figures here given, because these do not include the loans repaid out of proceeds from sales but only by means of sinking funds. As noted before, this report deals with the Southern system only.

[3] The London County Council's borrowing power is conferred by its annual Money Act which limits the amount of borrowing for each financial year (April 1 to March 31) for each purpose. Powers not exercised within the year are surrendered. The Council raises money for capital expenditure by issue of stock and the proceeds of each issue are subsequently appropriated according to the actual expenditure.

J 4. Explain how capital was raised?

*Glasgow.* By public issue and subscription.

*Manchester.* The loan debt at March 31, 1905, consisted of mortgages falling due at various periods up to 1932-'3. The loans for periods of years are obtained by public subscription after advertisement in local newspapers. Money is borrowed from private investors, and in some cases a commission is allowed to agents introducing loans at the rate of .05 of 1 per cent. for each year the loan is to run. Money raised under mortgage is in sums of not less than £100, repayable in periods of years. The powers granted by Parliament allow a longer term for the redemption of debt, and money is reborrowed to replace loans falling due.

*Liverpool.* By issue of corporate stock to the public and by mortgages upon the rates, etc.

*London C. C.* Stock is issued to the public and the issue announced by public advertisement.

*London United.* The company issued a prospectus in November, 1901, relating to an issue of £825,000 at 4 per cent. Of this amount of first mortgage debenture stock, £450,000 at par were issued to the vendor company in part payment of the purchase price and £375,000 were offered for public subscription. The whole amount of £825,000 is secured by a trust deed, constituting the debenture stock a first charge upon the whole of the assets and undertaking of the company, including its uncalled capital, subject only to an annual charge not exceeding £750. The trust deed contains a covenant by the company under which, while retaining the power to issue debenture stock to an amount equal to the nominal capital of the company, the company agrees that any future issue of debenture stock beyond £825,000 shall only be made for the purpose of capital outlay and then only to the extent of 50 per cent. of such outlay, after an equal amount shall have been first provided by calling up share capital of other funds of the company. The whole of the debenture stock issued shall rank *pari passu*. Under the articles of association the directors may borrow an amount equal to the nominal capital of the company.

*Dublin.* The debt now outstanding is divided as follows:

| | |
|---|---|
| Mortgage bonds, specially charged upon the Dublin United Tramways Co. | £150,000 |
| Ditto upon the Dublin Southern District Tramways Co. | 62,000 |
| Mortgage debentures, 3½%, charged upon the whole of the undertaking subject to the mortgage bonds, redeemable in 1938 at par. | 300,000 |
| "B" debenture stock, 3½%, charged upon the whole of undertaking subject to the mortgage bonds and mortgage debentures, redeemable in 1938 at par. | 300,000 |
| Total | £812,000 |

"B" debenture stock was issued at a discount of £24,704 and is redeemable at par in 1938. To produce this discount the directors have taken out a policy of insurance, and the premiums are charged against the yearly revenue accounts of the undertaking. This policy is worth about £3,400 on a 2¾ per cent. basis. The trust deed in favor of the debenture holders does not impose any limit to the amount to be borrowed, but any subsequent borrowed money will rank after the present liability.

Shares have been issued by private sale. All the bonds were issued at par except the B debenture stock, the discount upon which appears in the balance sheet as an asset.

*Norwich.* The whole of the mortgage bonds were taken at par by the promoters and no public issue was made.

J 5. If funds have been secured from any other sources for the construction and extension of plant, give amounts, dates and sources fully. (See also inquiry J 6.)

In no case is this separately shown in the balance sheet, but where it is not so shown it is quite possible that extensions have been made out of revenue and charged to ordinary maintenance without being separately distinguished. In this connection it is important to bear in mind that while some municipalities have not charged revenue with outlay of this character, yet they are repaying by means of sinking fund which is charged to revenue the whole of the capital which has been borrowed with the sanction of the central government for the purpose of making the outlay. There are several cases where outlay of a *temporary* nature has been charged to the revenue account, notably the London County Council, where the entire cost of temporary generating stations has been written off out of revenue. The same is true of the Glasgow horse traction system.

*Glasgow.* Out of depreciation and permanent way renewals fund and general reserve fund £531,023.

*Manchester.* There is a temporary overdraft on the bankers of £139,423 on capital account, but against this the department has a credit balance of £207,937 on revenue and renewals fund bank accounts and cash in hand on revenue account.

*Liverpool.* An overdraft on the bankers of £27,967 and a charge against revenue fund of £56,620; total £84,587.

*London C. C.* None.

*Companies.* None.

J 6. How has working capital been secured?

*Glasgow.* The working capital of the undertaking amounts to £243,096, which is provided as follows:

| | | |
|---|---|---|
| Loan debt outstanding | | £1,783,083 |
| Surplus provided out of revenue applied in reduction debt | | 449,275 |
| Depreciation and permanent way reserve fund | £777,637 | |
| General reserve fund | 32,590 | |
| | | 810,227 |
| Total | | £3,042,585 |

| | | |
|---|---|---|
| Deduct: Capital outlay | £2,763,381 | |
| Cars building | 18,875 | |
| Alterations in course of construction | 17,233 | |
| | | £2,799,489 |
| | | £243,096 |
| This amount is made up as follows: | | |
| Stores | £89,979 | |
| Debt owing to plant | 9,539 | |
| Cash in hand in bank | 9,160 | |
| Investments | 167,000 | |
| | | £275,678 |
| Less amounts owing to sundry creditors | | 32,582 |
| | | £243,096 |

*Manchester.* The capital account stands as follows:

| | | |
|---|---|---|
| Loan debt outstanding | | £1,504,649 |
| Amount set aside out of surplus revenue and applied in reduction of debt | | 74,150 |
| Renewals and depreciation fund | | 185,086 |
| Total | | £1,763,885 |
| Deduct amount expended on capital outlay | | 1,616,804 |
| | | £147,081 |
| This amount is made up as follows: | | |
| Debts due to plant | | £50,579 |
| Sundry stores, etc | | 83,785 |
| Cash in hand and in bank on revenue account | £220,800 | |
| Less temporary overdraft from bankers on capital account | 139,423 | |
| | | 81,377 |
| | | £215,741 |
| Deduct: Sundry creditors | | 68,660 |
| | | £147,081 |

*Liverpool.* The capital account stands as follows:

| | |
|---|---|
| Loan debt outstanding | £1,666,402 |
| Surplus provided out of revenue and applied in reduction of debt | 202,728 |
| Reserve renewals and depreciation fund | 271,019 |
| Insurance fund | 2,058 |
| | £2,142,207 |
| Of this amount there has been expended on capital outlay | 1,955,433 |
| | £186,774 |

Made up as follows:

| | | |
|---|---|---|
| Loan to the water committee | | £150,000 |
| Sundry stores | | 18,178 |
| Debtors to plant | | 10,272 |
| Cash in hand and in bank on general account | £113,639 | |
| Less overdraft from bankers on capital account | 27,697 | |
| | | 85,942 |
| | | £264,392 |
| Less: Sundry creditors | £52,298 | |
| Contribution in aid of rate | 25,320 | |
| | | 77,618 |
| | | £186,774 |

*London C. C.* ————

*London United.* ————

*Dublin.* The working capital of the company is £55,118, provided as follows:

| | |
|---|---|
| Share capital | £1,200,000 |
| Loan debt outstanding | 812,000 |
| | £2,012,000 |
| Deduct capital outlay | 1,809,956 |
| | £202,044 |
| Add surplus and other funds | 33,607 |
| | £235,651 |
| Deduct premium account | 180,533 |
| | £55,118 |

This amount is made up as follows:

| | | |
|---|---|---|
| Cash in hand and in bank | £67,011 | |
| Investments | 1,900 | |
| Stock of stores, etc | 23,677 | |
| Debts due to the company | 3,700 | |
| Policy | 3,400 | |
| | | 99,688 |
| Less amount due to sundry creditors | | 44,570 |
| | | £55,118 |

*Norwich.* Working capital has been provided as follows:

| | | |
|---|---|---|
| Share capital | £264,000 | |
| Loan debt | 66,000 | |
| | | £330,000 |

| | | |
|---|---|---|
| Add surplus and other funds | | £4,795 |
| | | £334,795 |
| Deduct amount expended on capital outlay | | 331,654 |
| | | £3,141 |

This is made up as follows:

| | | |
|---|---|---|
| Sundry debtors | £247 | |
| Stock in stores, etc | 3,675 | |
| Investments | 5,522 | |
| Cash in bank and in hand | 593 | |
| | | 10,037 |
| Deduct amounts owing to sundry creditors | | 6,896 |
| | | £3,141 |

SUMMARY OF SOURCES OF WORKING CAPITAL.

| | |
|---|---|
| Glasgow | Surplus reserves provided out of profits. |
| Manchester | Loans raised for capital purposes but unexpended, renewals fund and bank overdraft. |
| Liverpool | Surplus reserves provided out of profits. |
| London C. C. | Profit unappropriated and part of reserve fund uninvested. |
| London United | Capital stock, loans and reserve funds. |
| Dublin | Capital stock, loans and surplus funds. |
| Norwich | Capital stock and loans. |

J 7. What provisions have been made for payment of capital liabilities when due?

See inquiries B 3, D 22, D 25, I 19, I 20 and I 25.

J 8. Give the cash capital raised by the undertaking.

In the following table all items of premium added on conversion of capital stock or loans to a lower rate per cent. have been eliminated from the liabilities as shown in the balance sheets below. We have added to the capital stock and loans appearing in the balance sheets all items of premiums received on issue of the same which have been credited to premium capital account or reserve or other funds in the accounts of the plant. We have also, where possible, deducted from the capital outlay (as shown in the balance sheets) all items of premium and good will which are thus included.

In municipal plants we have added to the loan debt outstanding the amount of loans actually repaid out of sinking fund in order to arrive at the original capital raised for purposes of the undertaking. This is the only way in which the capital raised by municipalities can be compared with the capital raised by private companies, in which latter case no repayment of capital is required to be provided out of revenue.

| Towns. | Loan Capital Raised. | | Capital Stock Raised. | Total Capital Raised. | Total Capital Expended on Works. |
|---|---|---|---|---|---|
| | Still Outstanding. | Repaid by Means of Sinking Fund. | | | |
| Glasgow ..... | £1,783,083 | £449,275 | ..... | £2,232,358 | £2,753,381 |
| Manchester[1] ..... | 1,504,649 | 74,150 | ..... | 1,578,799 | 1,616,804 |
| Liverpool ..... | 1,666,402 | 202,728 | ..... | 1,869,130 | [2] 1,916,258 |
| London C. C..... | 2,415,329 | 208,364 | ..... | 2,623,693 | [2] 2,623,693 |
| Municipalities. | £7,369,463 | £934,517 | ..... | £8,303,980 | £8,910,136 |
| London United.... | £1,331,000 | ..... | £1,413,792 | £2,744,792 | £2,702,013 |
| Dublin ..... | 787,296 | ..... | 1,040,771 | 1,828,067 | 1,809,956 |
| Norwich ..... | 66,000 | ..... | 264,000 | 330,000 | 331,654 |
| Companies ... | £2,184,296 | ..... | £2,718,563 | £4,902,859 | £4,843,623 |
| Total..... | £9,553,759 | £934,517 | £2,718,563 | £13,206,839 | £13,753,759 |

It will be noticed from the above table that the municipalities have expended more capital than they have raised. This arises from the fact that in many cases the surplus funds provided out of revenue have been used in extension of works. In the case of private undertakings the capital expenditure is less than the capital raised. This is explained by the fact that private undertakings employ part of the capital raised in providing working capital.

[1] These figures are for the present undertaking and include £21,096 in loans still outstanding, £6,829 in debt repaid from sinking fund and some capital expenditures for the old undertaking leased to the company, but now a part of the present undertaking (see J 3).

[2] This item includes an amount for good will paid to the old company.

[3] This item includes an amount for good will paid on the purchase of the Southern system, the amount of which we were unable to ascertain.

## K 1. Summary of balance sheet.

| *Assets and Outlay.* | *Glasgow.* | *Manchester.* | *Liverpool.* | *London C. C.*[1] | *London United.* | *Dublin.* | *Norwich.* |
|---|---|---|---|---|---|---|---|
| Capital outlay | £2,763,381 | £1,616,804 | £1,955,433 | £2,623,693 | £2,702,013 | £1,809,956 | £331,654 |
| Other assets | 311,786 | 355,542 | 525,905 | 113,555 | 132,678 | 99,688 | 10,037 |
| Premiums and bonuses | ..... | Note[2] | Note[2] | Note[2] | 600,000 | 180,533 | ..... |
| Total | £3,075,167 | £1,972,346 | £2,481,338 | £2,737,248 | £3,434,691 | £2,090,177 | £341,691 |
| *Liabilities and Funds.* | | | | | | | |
| Capital stock | ..... | ..... | ..... | ..... | £2,010,042 | £1,200,000 | £264,000 |
| Loan debt secured | £1,783,083 | £1,504,649 | £1,666,402 | £2,415,329 | 1,331,000 | 812,000 | 66,000 |
| Other liabilities | 32,582 | 208,083 | 105,315 | 39,894 | 77,533 | 44,570 | 6,896 |
| Surplus and funds | 1,259,502 | 259,614 | 709,621 | 282,025 | 16,116 | 33,607 | 4,795 |
| Total | £3,075,167 | £1,972,346 | £2,481,338 | £2,737,248 | £3,434,691 | £2,090,177 | £341,691 |

## K 2. Assets and outlay further analyzed.

| *Capital Outlay:* | *Glasgow.* | *Manchester.* | *Liverpool.* | *London C. C.*[1] | *London United.* | *Dublin.* | *Norwich.* |
|---|---|---|---|---|---|---|---|
| Parliamentary expenses | £6,946 | £41,606 | £57,995 | ..... | £100,000 | £59,033 | £8,300 |
| Works and plant | 2,756,435 | 1,575,198 | 1,897,438 | £2,623,693 | 2,602,013 | 1,750,923 | 323,354 |
| *Other Assets:* | | | | | | | |
| Debts due | 9,539 | 50,579 | 10,272 | 23,043 | 19,503 | 3,700 | 247 |
| Stocks on hand | 126,087 | 83,785 | 18,178 | 28,608 | 24,792 | 23,677 | 3,675 |
| Cash | 9,160 | 221,178 | 113,639 | 30,363 | 85,172 | 67,011 | 593 |
| Funds invested | 167,000 | ..... | 150,000 | 31,541 | 3,211 | 5,300 | 5,522 |
| Sinking fund | ..... | ..... | 233,816 | ..... | ..... | ..... | ..... |
| *Premiums from Purchase and Bonuses:* | ..... | Note[2] | Note[2] | Note[2] | 600,000 | 180,533 | ..... |
| Total | £3,075,167 | £1,972,346 | £2,481,338 | £2,737,248 | £3,434,691 | £2,090,177 | £341,691 |

[1] These figures are for the Southern system only.

[2] In each of these cases, part of the present system was taken over from private companies, and the amounts paid included more or less for good will, prospective profits, etc., but the reports do not show how much. This point is also discussed under A 5-8.

K 3. Analysis of special items.

*Glasgow.* The total amount expended for "Parliamentary Expenses" was..... £15,857
Of which there has been written off out of profits..... 13,756

£2,101
Add preliminary expenses (electric traction) giving.... 4,845

£6,946

Capital outlay for "Works and Plant" consists of:

| | |
|---|---|
| Land | £107,395 |
| Permanent way, track and roadway | 830,401 |
| Electrical equipment of line | 562,398 |
| Buildings and fixtures | 416,196 |
| Plant at power and sub-stations | 387,420 |
| Workshop tools and sundry plant | 20,751 |
| Cars | 227,111 |
| Electrical equipment of cars | 171,043 |
| Other rolling stock | 7,196 |
| Miscellaneous equipment, horses and harness | 2,440 |
| Miscellaneous uniforms | 2,751 |
| Miscellaneous | 12,550 |
| Office furniture | 4,726 |
| Lease of Govan and Ibrox tramways | 4,057 |
| | £2,756,435 |

A fuller analysis of the above items is given in the annual report to May 31, 1905. The above capital outlay does not include the cost of the old horse traction plant, etc., £186,637, which has all been charged to revenue account.

"Stocks on Hand" was made up of:

| | |
|---|---|
| Cars building | £18,875 |
| Alterations in course of construction | 17,233 |
| Stores, spares, tickets, uniforms, etc | 89,979 |
| Total | £126,087 |

"Invested Funds" represents £157,000 in the city securities of Glasgow and £10,000 in those of Govan—a burgh to the west of Glasgow.

*Manchester.* "Parliamentary Expenses" includes not only what is ordinarily known as Parliamentary charges amounting to £16,318, but "preliminary and formation expenses prior to running" of £25,288, which perhaps should be included in "Works and Plant."

"Works and Plant" consists of the following items:

| | |
|---|---|
| Permanent way | £541,599 |
| Overhead equipment | 155,439 |
| Land | 69,302 |
| Buildings and fittings | 217,162 |

| | | |
|---|---|---|
| Rolling stock, cars | | £284,076 |
| Rolling stock, sundry vehicles | | 4,257 |
| Machinery and plant, car works | | 6,382 |
| Office furniture | | 4,949 |
| Leasehold properties | | 8,055 |
| Total new undertaking | | £1,291,221 |
| Old undertaking: Purchase of Carriage Co. properties, etc | £263,158 | |
| Balance of cost of old track being loans still unpaid | 20,819 | |
| | | 283,977 |
| | | £1,575,198 |

"Debts Due" includes an item of £36,268 owing to Manchester from other local authorities for reconstruction of tramways.

"Cash" represents not only the cash on hand and in bank on revenue account of £100,956, but also £119,844 on renewals account and £378 on sinking fund account.

*Liverpool.* "Parliamentary Expenses" of £57,995 consists of:

| | |
|---|---|
| Expenses of issue of stock | £49,467 |
| Stamp duty on conveyance | 2,837 |
| Engineers' fees | 2,967 |
| Parliamentary charges, etc | 2,724 |
| Total | £57,995 |

"Works and Plant" is made up of the following:

| | | |
|---|---|---|
| Purchase money paid Liverpool United Tramway and Omnibus Co | | £567,375 |
| Additional capital spent by company, but not included in share capital | | 46,803 |
| | | £614,178 |
| Deduct: Profits not apportioned by the company for payment of dividends | £17,073 | |
| Decrease in stud and harness, cars, omnibuses, wagonettes, etc., sold | 112,099 | |
| Horses transferred to separate account | 495 | |
| Land, etc., sold during year 1905 | 117 | |
| | | 129,784 |
| Net amount paid | | £484,394 |
| Compensation to solicitors, auditors and directors | | 17,362 |
| Tramways lines: Old city | £212,069 | |
| Old city extensions | 5,100 | |
| Added area | 40,653 | |
| | | 257,822 |

| | | |
|---|---|---|
| Reconstruction and extension of tramway for electrical haulage, including paving, permanent way, overhead electrical equipment, etc..... | | £608,274 |
| Land and buildings[1]..... | £134,911 | |
| Cars ..... | 292,308 | |
| Machinery ..... | 6,742 | |
| Sundry rolling and other stock..... | 8,331 | |
| | | 442,292 |
| Horses ..... | | 560 |
| Widening streets..... | | 9,857 |
| Purchase of undertaking of Garston Co..... | | 20,257 |
| Add outlay on Hatton Garden and Litherland properties, per foot note[2]..... | | 56,620 |
| | | £1,897,438 |

The investment of £150,000 is a loan to the water committee.

*London C. C.* The capital outlay on works and plant for the Southern system was composed of:

*Horse and Cable Traction.*

| | |
|---|---|
| Permanent way and general including good will..... | £601,197 |
| Property and buildings..... | 385,048 |
| Horses ..... | 29,831 |
| Rolling stock..... | 76,714 |
| Machinery and plant..... | 53,701 |
| Harness and equipment..... | 5,719 |
| Office furniture..... | 430 |
| Advertising plant..... | 1,034 |
| | £1,153,674 |

*Electric Traction.*

| | |
|---|---|
| Sub-stations: Acquisition of land..... | £20,741 |
| Erection of buildings..... | 41,690 |
| Machinery and plant..... | 35,817 |

| | |
|---|---|
| [1] Amount expended on land and buildings to December 31, 1905, was..... | £166,739 |
| Deducting the amount expended to December 31, 1904, on purchase of Hatton Garden site, transferred to reserve, renewal and depreciation account..... | 31,828 |
| Leaves ..... | £134,911 |

[2] On December 31, 1904, the municipality had expended £31,828 upon the new offices in Hatton Garden which item was included in the capital outlay. This amount together with the further outlay during 1905, amounting together to £44,716, has now been charged against the reserve renewal and depreciation account. This account has also been charged with the expenditure upon the Litherland tramways and car shed amounting to £11,904. These two items amount to £56,620 and are not included in the capital outlay as shown by the balance sheet published. We have, however, included the amount in the statement of assets and have made a corresponding correction in the reserve, etc., account treating the outlay as an investment of the reserve fund.

| | |
|---|---|
| Cables and ducts | £137,408 |
| Permanent way | 793,101 |
| Alterations to bridges | 13,591 |
| Stopping place signs | 235 |
| Depots: Acquisition of land | 20,140 |
| Erection of buildings | 130,133 |
| Machinery and plant | 1,021 |
| Rolling stock | 240,158 |
| Workshop tools and sundry plant | 3,491 |
| Commission of consulting engineer | 15,169 |
| Salaries | 4,071 |
| Preliminary expenses | 204 |
| Street widenings, etc.: Harleyford street | 11,782 |
| Camberwell New road | 1,200 |
| Queens road, Peckham | 67 |
| | £1,470,019 |

The expenditures for the Northern system (not included in this investigation) were:

| | | |
|---|---|---|
| Purchase money: North Metropolitan Co. | £573,951 | |
| London Street Co. | 218,398 | |
| | | £792,349 |
| Professional charges | | 9,423 |
| Stamp duty and incidental expenses | | 4,236 |
| Alterations and extensions | | 43,314 |
| Electric traction: Acquisition of land, sub-station | | 15,391 |
| Plans, etc., of proposed buildings | | 612 |
| Permanent way | | 3,982 |
| Alterations to bridges | | 1,762 |
| Plans of proposed depots | | 265 |
| Salaries, engineer's department | | 202 |
| | | £871,536 |

The capital outlay not allocated to either is:

| | |
|---|---|
| Horse traction, preliminary expenses | £290 |
| Electric traction: Western generating station: | |
| Acquisition of land | 80,789 |
| Erection | 198 |
| Rehousing | 46 |
| Electric traction: Eastern generating station: | |
| Acquisition of land | 25,593 |
| Erection of buildings | 89,401 |
| Pier and river wall | 32,413 |
| Machinery and plant, part temporarily installed at Loughborough, Deptford and Streatham | 67,914 |
| Rehousing | 8,164 |
| Commission of consulting engineer | 1,776 |
| Salaries of electrical engineering staff | 1,172 |
| Tramway subway: Works, etc | 80,222 |
| Alterations to bridges, preliminary expenses | 38 |

| | |
|---|---|
| Hammersmith car shed | £9,109 |
| Street Improvements: Red Lion Street, Garratt Lane. | 24,000 |
| Fulham Palace Road | 34,500 |
| Denmark Hill | 4,000 |
| Archway Road | 500 |
| Southampton Row | 14,500 |
| | £474,625 |

The total assets for the three accounts are:

| | *Southern System.* | *Northern System.* | *General—not Allocated.* | *Total.* |
|---|---|---|---|---|
| Capital outlay | £2,623,693 | £871,536 | £474,715 | £3,969,944 |
| Debts due | 23,043 | 13,191 | 1,228 | 37,462 |
| Stocks | 28,608 | ..... | ..... | 28,608 |
| Cash | 30,363 | 9,652 | 316 | 40,331 |
| Invested funds | 31,541 | 59,759 | ..... | 91,300 |
| Total | £2,737,248 | £954,138 | £476,259 | £4,167,645 |

*London United.* Owing to the fact as previously explained that the company purchased the undertaking for a lump sum, we cannot ascertain the actual amount expended under the head of "Parliamentary Expenses." We have therefore made a careful estimate of the amount, bearing in mind that the tramways run through the districts governed by 30 local authorities, and that the company has promoted bills in Parliament each year since 1898, all of which have been opposed by the local authorities. We consider £100,000 a fair estimate.

The capital outlay on "Works and Plant" is made up of:

| | |
|---|---|
| Street widenings, etc., and other public improvements. | £645,000 |
| Outlay on works and equipment | 1,957,013 |
| | £2,602,013 |

The company has been compelled, in order to obtain the consent of the various local authorities, to carry out many public improvements connected with streets and bridges. The outlay to December 31, 1905, amounted to £645,000; there are several outstanding improvements which have yet to be carried out which may bring this total up to £745,000.

"Debts due" included £7,900 deposited with local authorities. to insure the due performance by the company of its obligation to repair the roads. Interest is allowed by the various local authorities.

*Dublin.* The expenditure under the head of "Parliamentary Charges" amounts to £49,850. In addition, "Parliamentary Expenses" includes the sum of £9,183, being payments to local authorities to obtain their consent to the granting of powers to the company. The revenue account has been debited with the sum of £1,552—the expenses of formation of the company.

The officials of the plant are unable to subdivide the expenditure on capital outlay owing to the fact that the company has at various times purchased other undertakings for lump sums. They have, however, given us certain particulars of the amounts included in the balance sheet in respect to premiums on stocks and discount on "B" Debenture stock, amounting to £183,933. See inquiry J 2.

The company has borne the expense of widening a street which cost £8,000. It obtained property valued at £1,000, reducing the actual cost to £7,000, which is included in the capital outlay. The local authority imposed this condition before giving their consent to the laying of a double line by the company.

"Invested funds" includes the policy to provide the discount on "B" debenture stock valued at £3,400.

*Norwich.* The construction and equipment of the line was let by contract for a lump sum and no analysis can therefore be given of the capital outlay of £323,354, except that £44,000 of this amount was for street widenings, new streets and bridge improvements.

K 4. Do the values above given represent the original cost of the present assets, their present market value, or cost of duplication? State how values were fixed.

*Glasgow.* Original cost.

*Manchester, Liverpool, London C. C.* The new track and equipment is at the original cost; the part of the undertaking purchased from the company is at the price paid.

*London United, Dublin.* Original cost, including the plant and equipment taken over from the old companies at the price paid.

*Norwich.* Original cost. A lump sum was paid to a construction company for the whole undertaking.

## K 5. Liabilities and funds further analyzed.

| | *Glasgow.* | *Manchester.* | *Liverpool.* | *London C. C.*[1] | *London United.* | *Dublin.* | *Norwich.* |
|---|---|---|---|---|---|---|---|
| *Capital Stock* | ..... | ..... | ..... | ..... | £2,010,042 | £1,200,000 | £264,000 |
| *Loan Debt Secured* | £1,783,083 | £1,504,649 | £1,666,402 | £2,415,329 | 1,331,000 | 812,000 | 66,000 |
| *Other Liabilities:* | | | | | | | |
| Loans unsecured | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Bank overdraft | ..... | 139,423 | 27,697 | ..... | ..... | 719 | ..... |
| Sundry creditors | 32,582 | 68,660 | 77,618 | 39,894 | 77,533 | 43,851 | 6,896 |
| *Surplus and Funds:* | | | | | | | |
| Loan debt repaid | 449,275 | 74,150 | 202,728 | 208,364 | ..... | ..... | ..... |
| Sinking fund unapplied | ..... | 378 | 233,816 | ..... | ..... | ..... | ..... |
| Depreciation fund | 777,637 | 185,086 | 271,019 | ..... | ..... | 2,500 | ..... |
| Reserve fund | 32,590 | ..... | ..... | 66,607 | 15,000 | 21,000 | 4,197 |
| Insurance fund | ..... | ..... | 2,058 | ..... | ..... | 3,000 | ..... |
| Profit and loss balance | ..... | ..... | ..... | 7,054 | 1,116 | 7,107 | 598 |
| Total | £3,075,167 | £1,972,346 | £2,481,338 | £2,737,248 | £3,434,691 | £2,090,177 | £341,691 |
| Profit in aid of rate since commencement of undertaking | £157,760 | (?) | £293,592 | (?) | ..... | ..... | ..... |

[1] These figures are for the Southern system only.

K 6. Special items analysed where possible. (See also I 19, 20.)

*Municipalities.* Two of the four plants had bank overdrafts. This might appear misleading unless attention is drawn to the fact that in each case the municipality had cash to its credit in the bank on other accounts, and that the subdivision was merely an accounting convenience in order to keep each fund distinct. These overdrafts were as follows:

| | *Overdraft on* | | *Set off against Cash in Bank* | |
|---|---|---|---|---|
| | *Capital Account.* | *Revenue Account.* | *On What Account.* | *Amount.* |
| Glasgow | ..... | ..... | ..... | ..... |
| Manchester | £139,423 | ..... | Revenue | £110,893 |
| Liverpool | 27,697 | ..... | Revenue | 113,639 |
| London C. C. | ..... | ..... | ..... | ..... |

*Liverpool.* "Sundry Creditors" is made up of:

| | |
|---|---|
| Sundry accounts | £52,024 |
| In aid of rate | 25,320 |
| Unclaimed dividends | 274 |
| | £77,618 |

"Sinking fund unapplied" is the total of several funds:

| | |
|---|---|
| Tramway sinking fund | £84,090 |
| Mortgage debt sinking fund | 1,360 |
| Tramway undertaking sinking fund | 50,247 |
| Reconstruction, extension and equipment sinking fund | 96,190 |
| Litherland tramways and car shed sinking fund | 682 |
| Hatton Garden land and buildings sinking fund | 1,247 |
| | £233,816 |

Although the Hatton Garden and Litherland outlay has been taken out of reserve fund provided out of surplus profits of previous years, yet the municipality is charging present and future profits with the provision of a sinking fund in respect of this outlay.

*London C. C.* The total liabilities for the three accounts are:

| | *Southern System.* | *Northern System.* | *General—not allocated.* | *Total.* |
|---|---|---|---|---|
| Land secured | £2,415,329 | £754,491 | £464,886 | £3,634,706 |
| Sundry creditors | 39,894 | 59,766 | 1,446 | 101,106 |
| Loan debt paid | 208,364 | 117,045 | 9,829 | 335,238 |
| Reserve fund | 66,607 | ..... | .... | 66,607 |
| Profit and loss balance | 7,054 | 22,836 | 98 | 29,988 |
| Total | £2,737,248 | £954,138 | £476,259 | £4,167,645 |

*London United.* "Sundry Creditors" consists of unpaid dividends of £36,806 and accounts payable £40,727.

*Dublin.* "Sundry creditors" is made up of:

| | |
|---|---|
| Debenture interest accrued | £2,494 |
| B debenture stock interest | 1,662 |
| Sundry unpaid accounts | 4,012 |
| Wayleaves accrued | 583 |
| Dividends on share capital | 35,100 |
| | £43,851 |

*Norwich.* "Sundry creditors" consists of: Tradesmen's accounts £152, conductors' deposits £144, dividend on ordinary shares £6,600; total £6,896.

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Notes to L 1, 2 and 3, p. 509.

[1] Southern system only, but including both electric and horse traction as follows:

| *Receipts.* | *Electric.* | *Horse.* | *Total.* |
|---|---|---|---|
| Passenger traffic receipts | £535,754 | £128,168 | £663,922 |
| Rents received | 304 | 1,670 | 1,974 |
| Other receipts, sale of stores, etc | 1,766 | 1,135 | 2,901 |
| Advertising on cars and tickets less expenses | 7,537 | 1,648 | 9,185 |
| | £545,361 | £132,621 | £677,982 |

The rent received from the North Metropolitan Tramways Company under lease dated October 14, 1897, for the Northern system was:

| | |
|---|---|
| Lines, etc., at £45,000 per annum, less income tax | £42,750 |
| Depots, buildings, etc., at £14,245 per annum, less income tax | 13,504 |
| Percentage (12½) on excess of gross receipts over those of 1895, less income tax | 816 |
| Percentage on extensions, less income tax | 2,506 |
| Rents from tenants of property, Parkhurst Rd | 268 |
| Miscellaneous receipts | 2 |
| Total for Northern system | £59,846 |

The account for the General system—not yet allocated to either Southern or Northern system was as follows:

| | | |
|---|---|---|
| A deficiency on revenue account of £18,467 made up as follows: | | |
| General expenses | | £1,261 |
| Interest on loan debt | £12,048 | |
| Sinking fund | 4,514 | |
| | | 16,562 |
| Cost of training school | | 145 |
| Parliamentary expenses | | 3,310 |
| | | £21,278 |
| Reduced by: | | |
| Rents received | £1,109 | |
| Other receipts | 23 | |
| Interest on cash balances | 1,679 | |
| | | 2,811 |
| Net deficiency | | £18,467 |

This deficiency was charged against the balance of profits of previous years standing to the credit of the "appropriation account" at March 31, 1904 (£18,565), reducing it to £98.

[2] On tickets only; credited to traffic receipts.

[3] Including rents received, user of lines, and sundries, less amounts due to local authorities for running powers.

[4] From express service.

## L—REVENUE ACCOUNTS.

### L 1. Summary.

| *Revenue Account.* | *Glasgow.* | *Manchester.* | *Liverpool.* | *London C. C.*[1] | *London United.* | *Dublin.* | *Norwich.* |
|---|---|---|---|---|---|---|---|
| Income | £764,791 | £631,955 | £557,055 | £677,982 | £301,350 | £267,864 | £35,020 |
| Expenditure | 348,386 | 385,685 | 352,217 | 450,678 | 162,078 | 127,995 | 23,777 |
| Gross profit carried to profit and loss account | £416,405 | £246,270 | £204,838 | £227,304 | £139,272 | £139,869 | £11,243 |

### L 2. Revenue account—credits.

| *Income.* | *Glasgow.* | *Manchester.* | *Liverpool.* | *London C. C.*[1] | *London United.* | *Dublin.* | *Norwich.* |
|---|---|---|---|---|---|---|---|
| Traffic receipts | £756,480 | £628,520 | £550,084 | £663,922 | £292,603 | £258,212 | £34,554 |
| Mail, express, etc. | ..... | | | | | 3,000 | [4] 112 |
| Sales of current | 6,032 | ..... | ..... | ..... | ..... | 1,167 | ..... |
| Advertising | Note [3] | (?) | 6,356 | 9,184 | 4,622 | 4,540 | 97 |
| Rents of property | 1,869 | ..... | ..... | 1,074 | 1,332 | 693 | ..... |
| Other receipts | 410 | 3,426[2] | 615 | 2,902 | 2,793 | 252 | 257 |
| Total | £764,791 | £631,955 | £557,055 | £677,982 | £301,350 | £267,864 | £35,020 |

### L 3. Revenue accounts—debits.

| *Expenditures.* | *Glasgow.* | *Manchester.* | *Liverpool.* | *London C. C.* | *London United.* | *Dublin.* | *Norwich.* |
|---|---|---|---|---|---|---|---|
| Maintenance | £73,268 | £51,280 | £85,079 | £60,298 | £33,803 | £30,626 | £6,229 |
| Transportation | 238,067 | 301,412 | 240,323 | 358,239 | 105,080 | 80,474 | 14,240 |
| General | 37,051 | 32,993 | 26,815 | 32,141 | 23,195 | 16,895 | 3,308 |
| Total | £348,386 | £385,685 | £352,217 | £450,678 | £162,078 | £127,995 | £23,777 |

NOTE.—Notes to L 1, 2 and 3 are to be found on p. 508.

L 4. Expenditures further analyzed.

| *Maintenance.* | *Glasgow.* | *Manchester.* | *Liverpool.* | *London C. C.*[4] | *London United.* | *Dublin.* | *Norwich.* |
|---|---|---|---|---|---|---|---|
| Track and roadway (paving) | £24,319 | £9,537 | | | £7,950 | £9,996 | £2,488 |
| Electric lines | 6,694 | 5,811 | £38,009 | £18,935 | 3,722 | 3,155 | 520 |
| Electric plant | 940 | 985 | | | Note[5] | 273 | 62 |
| Steam plant | 2,167 | ..... | ..... | [6]7,198 | Note[6] | 793 | 478 |
| Buildings and fixtures | 5,461 | 569 | 1,909 | 4,423 | Note[7] | 1,046 | 212 |
| Cars | 17,489 | 34,378 | 43,252 | 28,828 | 19,753 | 11,422 | 1,442 |
| Electrical equipment of cars | 13,733 | | | | | 3,642 | 541 |
| Misc. equipment and shop | 2,465 | ..... | 1,909 | 914 | 2,378 | 299 | 486 |
| *Transportation.* | | | | | | | |
| Current purchased | ..... | 117,202 | 96,596 | [8]93,584 | ..... | ..... | ..... |
| Power plant wages | 8,869 | ..... | ..... | 5,964 | | 4,333 | 807 |
| Fuel for power | 10,200 | ..... | ..... | 2,850 | | 8,003 | 2,752 |
| Water for power | 679 | ..... | ..... | 1,025 | 21,259 | 245 | 18 |
| Lubricants and waste | 922 | ..... | ..... | | | 331 | 246 |
| Supplies for power plant | 238 | ..... | ..... | 5,399 | | ..... | ..... |
| Horse traction | ..... | ..... | ..... | 54,920 | ..... | ..... | ..... |
| Superintendence of transport | 4,624 | 1,685 | 121,121 | 159,863 | 78,294 | 59,273 | 1,043 |
| Wages | 170,638 | 137,091 | | | | | 8,337 |
| Car service supplies and exp. | 19,236 | 18,666 | 13,403 | 18,827 | 1,862 | 2,086 | ..... |
| Ticket check[1] | 8,875 | 10,059 | 2,042 | 2,494 | 1,753 | 1,725 | 146 |
| Uniforms | 6,386 | 4,262 | 2,490 | 3,671 | 1,912 | 1,590 | 103 |
| Cleaning, sanding track, etc. | 3,826 | 2,792 | 1,034 | 8,197 | ..... | [9]2,888 | 788 |
| Other transportation | 3,579 | [9]9,655 | 3,637 | 1,445 | ..... | | ..... |
| *General.* | | | | | | | |
| Directors' allowances | ..... | ..... | ..... | ..... | 1,000 | 1,900 | 375 |
| Salaries | 6,079 | 10,486 | (?) | 9,497 | 2,506 | 3,569 | 1,358 |
| Auditing | 100 | ..... | 100 | ..... | 157 | 165 | (?) |
| Superannuation schemes, etc. | 3,077 | ..... | 414 | 246 | 514 | 348 | ..... |
| Legal expenses | 1,040 | 150 | 11,082 | 367 | 196 | 681 | 414 |
| Injuries, damages and claims | 15,581 | 11,328 | | 10,865 | 9,274 | | 71 |
| Insurance—fire, boiler, accident | 1,258 | 582 | 1,032 | 695 | 952 | 5,905 | 633 |
| Licenses and expenses | 713 | (?) | 369 | 891 | Note[11] | 1,020 | ..... |
| Rents | 3,105 | 3,214 | 1,066 | 5,244 | 584 | 3,307 | 65 |
| Office expenses | 2,078 | 3,268 | 6,386 | 2,948 | 994 | Note[10] | 152 |
| Other general | 4,020 | 3,965 | [9]6,366 | 1,388 | [11]7,018 | ..... | 240 |
| Total | £348,886 | £385,685 | £352,217 | £450,078 | £162,078 | £127,995 | £23,777 |

L 5. Analysis of special items.

*London C. C.* The expenditures for "Maintenance" were divided between the electric and horse traction systems as follows:

| | *Electric Traction.* | *Horse Traction.* |
|---|---|---|
| Permanent way | £9,732 | £9,203 |
| Buildings | 2,036 | 2,216 |
| Rolling stock | 24,666 | 4,162 |
| Machinery and plant | 2,936 | 1,347 |
| Cable plant | 1,030 | .... |
| Office furniture and advertising plant. | 193 | 43 |
| Harness and equipment | .... | 508 |
| Power plant buildings | 171 | .... |
| Power plant cables | 987 | .... |
| Power plant machinery and plant | 898 | .... |
| Power plant surplus property repairs | 170 | .... |
| | £42,819 | £17,479 |

The "Transportation" expenses of horse traction lines were apportioned as follows:

| | |
|---|---|
| Forage | £25,916 |
| Granary wages | 1,926 |
| Horsekeepers' wages | 13,409 |
| Shoeing | 2,763 |
| Veterinary attendance and horse superintendence | 465 |
| Sundry stable expenses | 386 |
| Loss on sale of horses | 2,233 |
| Horse hire (Catford cars) | 7,822 |
| Gas and water | 1,124 |
| Platform expenses, drivers and conductors | 37,066 |
| Other wages | 4,802 |

Notes to L 4, p. 510.

[3] Less advertisements on tickets.

[3] Including an item of £8,360 for "depots expenses."

[5] Including maintenance of cable plant as well as electric and horse systems.

[6] The figures include, of course, both electric and horse traction, but for the Southern system only.

[7] Cost of steam purchased as well as electricity.

[8] Included in expenditures upon cars.

[9] Included in expenditures on miscellaneous equipment.

[10] Including an item of £1,413 for "depot expenses."

[11] This item includes £2,000 as an annual contribution to the city fund to cover salaries and other expenses not otherwise charged against the tramway undertaking, and £1,219 for expenditures in connection with management of securities.

[12] Included in rents.

[13] This amount opposite "other general" expenses includes expenditures for licenses, for management of debenture stock (£827) and stables (£2,130).

| | |
|---|---|
| Car service supplies and expenses | £2,654 |
| Uniforms | 968 |
| Ticket check | 582 |
| Clearing and sanding track | 1,121 |
| | £103,237 |

The "Transportation" charges of the electric lines were:

| | |
|---|---|
| Hired power, current and steam | 93,584 |
| Power plant wages and salaries | 5,964 |
| Fuel for power | 2,850 |
| Light for generating and sub-stations | 715 |
| Lubricants and waste, water and stores | 1,025 |
| Miscellaneous supplies, etc., for power plant | 4,684 |
| Gas and water | 320 |
| Platform expenses, motormen and conductors | 99,010 |
| Other wages | 18,986 |
| Car service supplies and expenses | 16,172 |
| Uniforms | 2,703 |
| Ticket check | 1,912 |
| Clearing and sanding track | 7,077 |
| Total | £255,002 |

The "General" expenses of the two systems were:

| | *Electric.* | *Horse.* |
|---|---|---|
| General office salaries | £7,756 | £1,741 |
| Rent, etc | 1,538 | 3,706 |
| Office expenses | 2,332 | 616 |
| Legal expenses | 331 | 36 |
| Injuries, damages and claims | 9,734 | 1,131 |
| Licenses and excise duties | 657 | 234 |
| Insurance—fire, boiler, accident | 535 | 159 |
| Superannuation fund | 201 | 45 |
| Workmen's compensation | 93 | 3 |
| Travelling allowances (employees) | 1,157 | 136 |
| Total | £24,334 | £7,807 |

The totals for the two systems were:

| | | |
|---|---|---|
| Maintenance | £42,819 | £17,479 |
| Transportation | 255,002 | 103,237 |
| General | 24,334 | 7,807 |
| Total | £322,155 | £1,128,523 |

*Dublin.* As regards paving, it should be noted that in addition to paving 18 inches on each side of the track, the company in the case of Monkstown road were required to pave the whole of the street for a distance of 2 miles, being 6 feet on each side of the track. This cost £57 per yard of street, or a total cost of about £10,032. The repair of this street has been borne by the tramway company, but has not cost much beyond the repair of the track.

The local authority imposed this condition before agreeing to extra powers being granted to the company.

The city compels the company to sand the track up to their paving limit. The matter was the subject of legal proceedings which the company took up to the House of Lords, whose decision was against the company. The city does not sand the remainder of the streets.

*Norwich.* During the year exceptional outlay has been made on maintenance and repairs, including the renewal of several important junctions and a number of crossings, etc., amounting to about £1,300.

In addition to the paving between the rails and 18 inches beyond on each side, the company has to maintain the whole width of the roadway where there is a less space than three feet between the footpath and the rail, and also the junctions between the paving done by the company and the city. The length of street which the company is bound to repair, being less than three feet in width, is about one mile. The question of the obligation of the company to keep in repair the junctions is at present the subject of litigation and accounts for the large item of legal expenses in the revenue account.

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Notes to M 1, 2 and 3, p. 514.

[1] Income from investments. The sinking fund is paid over annually to city chamberlain in reduction of debt and is not invested in any form.

[2] Payment to the "Common Good" fund, not directly in aid of rates.

[3] Parliamentary expenses.

[4] The amount of £5,000 transferred from the reserve fund was in order to make the contribution in aid of rate £51,000, the profits of the year only allowing a contribution of £46,000.

[5] The city has purchased the site of the Infirmary at a cost of £400,000. Part of the land has been added to the street on all four sides and the tramway undertaking is charged with the interest, sinking fund and other charges relating to £100,000, but neither the capital account nor the liabilities of the tramway department have been charged with capital cost.

[6] This item consists of bank interest of £2,718, of interest from loan to water department of £4,108 and £2,747, the income derived from the investment of sinking funds numbers 2 and 4 in following note, which are credited with such an annual installment as will repay the debt without any accumulating interest.

[7] This amount is composed of the following payments:

| | |
|---|---|
| 1. Tramway undertaking sinking fund | £13,915 |
| 2. Tramways sinking fund | 7,007 |
| 3. Reconstruction, extension and equipment sinking fund | 29,999 |
| 4. Mortgage debt sinking fund | 170 |
| 5. Litherland tramways and car shed sinking fund | 349 |
| 6. Hatton Garden land and buildings sinking fund | 873 |
| 7. Cancellation of debt account | 2,984 |
| | £55,297 |

The above sinking fund installments vary in principle. Numbers 1 and 3 are accumulating funds; numbers 2 and 4 are not accumulating; numbers 5 and 6 are optional as already explained; number 7 is an annual repayment of principal.

Continued on p. 515.

M 1. Gross profits—credits.

| | *Glasgow.* | *Manchester.* | *Liverpool.* | *London C. C.* | *London United.* | *Dublin.* | *Norwich.* |
|---|---|---|---|---|---|---|---|
| Balance from revenue account.. | £416,405 | £246,270 | £204,838 | £227,304 | £139,272 | £139,869 | £11,243 |
| Interest on investments and bank balance ..... | [1] 3,113 | 1,869 | [6] 9,573 | ..... | ..... | 78 | 222 |
| Total..... | £419,518 | £248,139 | £214,411 | £227,304 | £139,272 | £139,947 | £11,465 |

M 2. Gross profits—debits.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Interest on loan debt..... | £49,906 | £52,120 | £53,994 | £67,546 | £36,778 | £25,091 | £2,640 |
| Dividends on share capital..... | ..... | ..... | ..... | ..... | [10] 78,706 | 70,200 | 6,600 |
| Interest on bank overdraft..... | ..... | ..... | ..... | ..... | ..... | 478 | ..... |
| Rent of leased lines..... | 5,995 | 10,000 | 5,858 | ..... | ..... | ..... | ..... |
| Sinking fund installments..... | 46,919 | 35,379 | [7] 55,297 | 69,408 | ..... | ..... | ..... |
| Wayleaves ..... | ..... | ..... | ..... | ..... | [11] 1,630 | 14,567 | ..... |
| Rates and taxes..... | 44,216 | 28,895 | 23,304 | 23,786 | 11,605 | 16,851 | 1,236 |
| Balance of net profit carried to profits disposal account..... | 272,482 | 121,745 | 75,958 | 66,564 | 10,553 | 12,760 | 989 |
| Total..... | £419,518 | £248,139 | £214,411 | £227,304 | £139,272 | £139,947 | £11,465 |

M 3. Disposal of net profit.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Net profit for the year..... | £272,482 | £121,745 | £75,958 | £66,564 | £10,553 | £12,760 | £989 |
| Transferred from reserve fund of previous year..... | ..... | [4] 5,000 | ..... | ..... | ..... | ..... | [14] 11 |
| Total..... | £272,482 | £126,745 | £75,958 | £66,564 | £10,553 | £12,760 | £1,000 |
| Depreciation fund..... | £221,792 | £70,907 | £50,638 | [16] £22,308 | ..... | [12] £2,500 | ..... |
| Reserve fund..... | 24,799 | ..... | ..... | 35,000 | £10,000 | 9,000 | £1,000 |
| Street improvements..... | ..... | [5] 4,043 | ..... | ..... | ..... | ..... | ..... |
| Profit applied in aid of rate..... | [3] 25,000 | [4] 51,000 | 25,320 | ..... | ..... | ..... | ..... |
| Miscellaneous ..... | [3] 891 | [3] 795 | ..... | [9] 2,202 | ..... | [13] 1,000 | ..... |
| Added to credit balance of profit and loss account for year ..... | ..... | ..... | ..... | 7,054 | 553 | 260 | ..... |
| Total..... | £272,482 | £126,745 | £75,958 | £66,564 | £10,553 | £12,760 | £1,000 |
| Credit balance in profit and loss at the end of year.... | | | ..... | £7,054 | £1,116 | £7,107 | £598 |

M 4. Analysis of special items.

*London C. C.* The division of the accounts between electric and horse traction is as follows:

| | *Electric.* | *Horse.* |
|---|---|---|
| Balance from revenue account..... | £223,205 | £4,099 |
| Against which the following items were charged: | | |
| Interest on loan debt..... | 40,257 | 27,289 |
| Sinking fund installments..... | 44,405 | 25,003 |
| Rates and taxes..... | 19,158 | 4,628 |
| Loss on horse traction..... | 52,821 | *52,821* |
| Total ..... | £156,641 | £4,099 |
| Subtracting these amounts from the gross profit above, leaves as net profit | £66,564 | ..... |

Notes to M 1, 2 and 3 continued from p. 513.

[8] Leasehold outlay.

[9] Composed of £261, cost of installing electric lighting in head office, and £1,941, expenditure in connection with proposal to run electric cars by cable traction (since abandoned).

[10] The dividends paid by the company have been: In 1902, 8 per cent.; 1903, 8 per cent.; 1904, 6 per cent.; 1905, 3 per cent.

[11] The company has to pay annual sums by way of wayleaves to the various local authorities. These amount to £5,527 in all, of which only £1,630 had been incurred in 1905. The wayleaves are on a sliding scale and increase periodically. The present value of these annual charges at 4 per cent. up to the time when the various local bodies may purchase is about £100,000.

[12] "Maintenance Fund."

[13] Accident insurance.

[14] The credit balance of profit and loss account at the end of the previous year was decreased £11 to allow £1,000 to be credited to the reserve fund.

[15] Liquidation of balance of expenditure for temporary generating stations.

# TAXATION OF GAS, ELECTRIC SUPPLY AND TRAMWAY UNDERTAKINGS IN GREAT BRITAIN

By MILO R. MALTBIE

The principal authorities to be consulted are:

1. Acts of Parliament and sessional papers.
2. Regulations of the Board of Trade, Local Government Board and the Light Railway Commissioners.
3. Standing Orders of the House of Commons and the House of Lords.
4. Browne & McNaughton: "The Law of Rating * *"
5. Michael & Will: "The Law Relating to Gas and Water," fifth edition.
6. Newbigging, Thomas and Wm.: "Valuation of Gas, Electricity Works * *"
7. Robertson: "The Law of Tramways and Light Railways in Great Britain," third edition.
8. Ryde: "The Law and Practice of Rating * *," second edition.

The British system of taxation is so complex and the various parts are so interwoven that the situation can be portrayed more easily and clearly by a single report for the three subjects of inquiry than by three separate statements in schedule form which would involve considerable duplication. Not only will the payments made to the local authorities in the form of "rates" be considered, but all payments to local or central authorities which must be made by companies or municipalities operating the three kinds of undertakings considered in this investigation. Many of them are fees and not taxes, if we adopt the distinction made by economists, but they may be treated here without great injury to the strict definition of "taxation."

For the purpose of this investigation it is more important to ascertain whether companies and municipalities are subject to the same or to equal burdens than to describe in detail what taxes or fees are imposed and how the present conditions developed histor-

ically; but to settle the former, a glance at the latter will be necessary.

### STAMP DUTIES.

The most numerous obligatory payments to the central government, but not the most important, are the stamp duties. For example, all conveyances or transfers of property must bear stamps ranging from 6d., when the consideration is £5 or less, to £1 10s., when it is more than £275 but not over £300; with an extra 5s. for every additional £50 or part thereof. All issues of loan capital must be stamped at the rate of 2s. 6d. per £100. Releases, surrenders, etc., at 6d. per £100. Contract notes for over £5 but less than £100, 1d., and for £100 or over, 1s. Agreements under hand pay 6d.; under seal, 10s. Upon all receipts for £2 or over, a 1d. stamp must be affixed. These, and others which might be given, apply to companies and municipalities alike. The amounts spent in any one year are usually insignificant.

There are other duties which apply alone to companies. The more important ones for companies whose liability is limited by the share capital are as follows: (For details see the Companies Act, 1862, c. 89; Stamp Act, 1891, c. 39; Financial Act, 1899, c. 9; and amendments.)

| | |
|---|---|
| Fee stamp on notice of office | 5s. |
| Fee stamp on Articles | 5s. |
| Deed stamp on Articles | 10s. |
| Deed stamp on Memorandum | 10s. |
| Fee stamp on Memorandum as follows: | |
| For registration of a company whose nominal capital does not exceed £2,000 | £2 0s. |
| For registration of a company whose nominal capital exceeds £2,000 the above fee of £2, and for every £1,000 after the first £2,000 up to £5,000 | £1 0s. |
| For every £1,000 of nominal capital or part of £1,000 after the first £5,000 up to £100,000 | 5s. |
| For every £1,000 of nominal capital or part of £1,000 after the first £100,000 | 1s. |

With a limit of £50 as the maximum fee stamp. It will be seen that the limit of £50 is reached when the capital of the company is £525,000.

Duty on share capital per £100 is 5s.

Combining all of these fees, one finds that for a nominal share capital of £100 the total would be £3 15.; £1,000 the total would be £6; £10,000 the total would be £32 15s.; £100,000 the total would be £280 5s.; £500,000 the total would be £1,300 5s.; £1,000,000 the total would be £2,551 10s.

In terms of percentages, these amounts range from $3\frac{3}{4}$ per cent. to .25 of 1 per cent. and decrease as the nominal share capital increases. If the share capital is increased at any time after the registration of the company a duty of 5s. per £100 and fee stamps according to the above scale with a limit of £50 must be paid.

In addition there are stamp duties and fees to be paid for the registration of many documents, such as:

| | s. | d. |
|---|---|---|
| Memorandum of satisfaction of mortgage or charge. | 5 | 0 |
| Contract for issue of fully paid or partly paid shares | 5 | 0 |
| Consent of board of trade to change of name | 5 | 0 |
| Special resolution | 5 | 0 |
| Copy of register of directors or managers | 5 | 0 |
| Declaration of compliance precedent to registration. | 5 | 0 |
| Consent to act as director | 5 | 0 |
| List of persons who have consented to act as directors | 5 | 0 |
| Application for certificate of incorporation | 5 | 0 |
| Prospectus | 5 | 0 |

Certain of these fees or stamp duties are not applicable to companies organized by act of Parliament, but they are so small that for practical purposes all companies with limited liability are subject to the same charges whether incorporated under the general company acts or by special act of Parliament.

None of the company acts apply to municipalities, of course, and they therefore escape these duties. Upon the other hand, there are charges which fall upon municipalities and not upon companies. Approval of various acts relative to the issue of securities must be obtained from the central government, local inquiries are held and special documents must be stamped. In the long run, therefore, there is probably little, if any, difference between municipal and company undertakings; and what difference there may be is not important. In any one year the expenditures for fees and stamp duties might be considerable for that twelve months, but scattered over a long period of time as they come to be, they are light.

### PARLIAMENTARY CHARGES ON PRIVATE BILLS.

The expenses connected with the granting of powers are far more important. The process of incorporation is comparatively simple and inexpensive, but mere incorporation confers no authority whatever to operate an undertaking in any specific locality. To obtain statutory powers for this purpose, one must proceed either by private bill or provisional order, or also by a light railway order in the case of tramways. Each avenue is open to municipalities and companies. Let us consider first the Parliamentary charges connected with a private bill.

The Standing Orders of each House of Parliament and the statutes specify in great detail the procedure which must be followed in the preparation, introduction, consideration and enactment of private bills. Those for the House of Commons alone cover over 80 duodecimo pages in fine type and prescribe not merely the course to be pursued after the measure has reached the Private Bill Office of the House, but also certain things which must have been done prior to that time, even several months before. (For a résumé of this procedure see the history of franchise legislation in Great

Britain.) The table of fees to be paid by the promoters while the bill is before the House of Commons is:

On the deposit of the petition, bill, plan or any other document in the Private Bill Office..... £5
For every day on which the examiners shall inquire into the compliance with the Standing Orders.... £5

*For Proceedings in the House.*

On the presentation of the bill..... £5
On the first reading of the bill..... £15
On the second reading of the bill..... £15
On the report from the committee on the bill..... £15
On the third reading of the bill..... £15

* * * * * * * *

The preceding fees on the presentation, first, second, and third readings, and report, to be increased according to the money to be raised or expended under the authority of any bill for the execution of a work, in conformity with the following scale:

If the sum be £100,000 and under £500,000, twice the amount of such fees.
If the sum be £500,000 and under £1,000,000, three times the amount of such fees.
If the sum be £1,000,000 and above, four times the amount of such fees.

*For Proceedings Before any Committee or the Referees.*

For every day on which the committee or the referee shall sit—
If the promoters of the bill appear by counsel..... £10
If they appear without counsel..... £5

*Fees to Be Paid by the Opponents of a Private Bill.*

On the deposit of every memorial complaining that the Standing Orders have not been complied with.... £1
On the presentation or deposit of every petition against a private bill..... £2

*For Proceedings Before the Examiners, or Before any Committee, or the Referee.*

For every day on which the examiners shall inquire into any memorial complaining of a non-compliance with the Standing Orders..... £3
For every day on which the petitioners appear before any committee, or the referees..... £2

## General Fees.

| | £ | s. | d. |
|---|---|---|---|
| On every motion, order, or proceeding in the House upon a private bill, petition, or matter not otherwise charged..... | 1 | 0 | 0 |
| For copies of all papers and documents, at the rate of 72 words in every folio— | | | |
| If five folios or under..... | | 2 | 6 |
| If above five folios, per folio..... | | 0 | 6 |
| For the copy of a plan made by the parties.. | 1 | 0 | 0 |
| For the inspection of a plan, or of any document ..... | | 5 | 0 |
| For every plan or document certified by the Speaker pursuant to any Act of Parliament ..... | 10 | 0 | 0 |
| For every day on which any parties shall be heard by counsel at the bar, from each side ..... | 10 | 0 | 0 |

| | £ | s. | d. |
|---|---|---|---|
| For every day on which a committee of the whole House shall sit on a private bill or matter | 6 | 0 | 0 |
| For serving any summons or order on a private bill or matter | 1 | 0 | 0 |
| For every order for the commitment or discharge of any person | 1 | 0 | 0 |
| For taking any person into custody for a breach of privilege or contempt | 5 | 0 | 0 |
| For taking any person into custody for any other cause | 2 | 0 | 0 |
| For every day on which any person shall be in custody | 1 | 0 | 0 |
| For riding charges, per mile | | | 6 |

FEES TO BE PAID ON THE TAXATION OF COSTS ON PRIVATE BILLS.

| | £ | s. | d. |
|---|---|---|---|
| For every application or reference to "the taxing officer of the House of Commons" for the taxation of a bill of costs | 1 | 0 | 0 |
| For every £100 of any bill which shall be allowed by the taxing officer | 1 | 0 | 0 |
| On the deposit of every memorial complaining of a report of the taxing officer | 1 | 0 | 0 |
| For every certificate which shall be signed by the Speaker | 1 | 0 | 0 |
| For copies of any documents in the office of the taxing officer per folio of 72 words | | 1 | 0 |

* * * * * * * *

FEES TO BE TAKEN BY THE SHORTHAND WRITER.

| | £ | s. | d. |
|---|---|---|---|
| For every day he shall attend | 2 | 2 | 0 |
| For the transcript of his notes, per folio of 72 words | | | 9 |

The preceding fees shall be charged, paid, and received at such times, in such manner, and under such regulations, as the Speaker shall from time to time direct.

The House of Lords has its own elaborate rules not precisely the same as the House of Commons and a schedule of fees somewhat dissimilar; but it is not necessary to quote them here, for those of the House of Commons give a general idea of their character.

The total amount of these fees for a single bill is quite variable. If a measure is "opposed," that is, if persons appear against the bill in committee, the cost will be very much greater than if it goes through as an "unopposed" bill. Also the larger the amount of money involved, the larger the fees. In the four years from 1898 to 1901, the House of Commons received upon an average £41,187 per year in fees upon private bills, or about £170 for each bill which was read the first time.[1] Some of the measures were dropped during the session and about one-third of them were opposed. If one may be allowed to strike a general average, the cost

[1]Appendix 6 to the *Report from the Select Committee on Private Business*, Sessional Papers, 1902 (378).

for an unopposed bill in the House of Commons which is finally enacted probably approximates £150. If the bill is opposed, the fees may even exceed a thousand pounds. As every measure must go to the House of Lords, the total fees may be nearly doubled.

Besides these Parliamentary fees, there are five other classes of expenses: Printing and advertising, local expenses, Parliamentary agents' charges, counsel's fees and fees of expert witnesses. Here again the cost is greatly increased if the bill is opposed and the committee hearings prolonged. It is quite common for Parliamentary charges in such instances to reach several thousand pounds. But as bills come and go, opposed and unopposed, the average seems to be about £1,500 or £2,000, including Parliamentary fees. Now none of the expenses just mentioned is fixed specifically by Parliament as in the case of the fees of the House of Commons or the House of Lords. The promoters and the circumstances surrounding each bill determine how large or how small they shall be. But indirectly the standing orders of the two Houses and the provisions of the statutes are responsible for most of the expense. For example, the cost of printing and advertising would be very small if the promoters were not obliged to post notices and insert advertisements in certain papers so that every one affected by the bill may be duly advised of its proposals. Again, the charges of Parliamentary agents would be very much less than they are if the procedure had not become so technical that men with years of experience must be employed to avoid shipwreck upon this or that requirement, for a failure to obey means additional expense and usually postponement to the next session, when the proceeding must be begun anew.[1]

The big variation in the amount of expense incurred is due to the extent of opposition, and this in turn is largely due to the character of the measure. Powers to carry out an ordinary scheme may be obtained through provisional orders, which are much less expensive and for which the procedure is much simpler. But the Board of Trade or Local Government Board will not issue an order where the powers are at all unusual or where the scheme proposes to depart from the beaten track in any essential point. Consequently, the measures which take the shape of private bills are such as are likely to arouse opposition.

Coming now to the question whether bills promoted by cities are more expensive than company measures, or vice versa, it is clear that there is nothing in the procedure which imposes larger costs upon one or the other. There are certain differences due to

[1] An extreme instance of what a special act may cost under unusual circumstances is the Water Act of the Derwent Valley Water Board (a joint body representing the towns of Derby, Nottingham, Leicester and Sheffield), cited in Redlich and Hirst, *Local Government in England*, v. 2, p. 346-347. The Parliamentary charges for this bill amounted to about £110,000, of which £60,000 or £70,000 were paid to solicitors, barristers and technical experts for their professional services, so it is said. The measure was long fought by vested interests and landowners.

the fact that one is a public body and the other private, but the fixed fees of each practically amount to the same. But as the expenses for most of the items are largely within the control of the promoters, an equality of requirements does not necessarily mean an equality of expenses.

There is no published record which gives complete data upon this point, but certain returns have been issued by Parliament which throw some light upon the question. One published in 1900 shows that in the seven years from 1892 to 1898 some 434 bills were promoted by town councils and other local authorities in England and Wales at an expense of over £584,000—an average of nearly £1,350 per bill. In the same period, 102 bills promoted by tramway, gas and electric companies cost nearly £190,000—an average of £1,860 per bill. (There were 31 companies which did not make returns, so that these figures are not complete.) These statistics would seem to indicate that a bill promoted by a private company costs more than one fathered by a local authority and that the difference is nominally £500 per bill.

This comparison is somewhat misleading. The bills promoted by the local authorities include not only those relating to gas, electricity and trams, but every other subject, such as paving, refuse disposal, streets, police, bridges, harbors, drainage, cemeteries etc. Now as measures relating to gas, electricity and trams usually arouse more opposition than other bills, the average for *all* would be lower than the average for gas, electricity and tram bills alone. Consequently, if a comparison were made between the same sort of bills promoted by municipalities and by companies, the difference would be considerably less than £500 per bill. What the exact difference would be cannot be obtained from the return, for the bills promoted by local authorities are not differentiated by subjects.

Several explanations may be offered for the difference that probably exists: (1) That the company schemes are larger, more novel and therefore more likely to arouse opposition; (2) that private corporations controlling public utilities are viewed with suspicion, and their plans frequently opposed to secure concessions; (3) that companies are more liberal in retaining counsel and expert witnesses than cities; and (4) that Parliament is more hostile to company schemes, so that a greater preponderance of evidence and legal talent is necessary. The last is entirely untenable. Parliament has always been very considerate of private interests, and if it has favored either, it has been the private company and not the municipality. The first doubtless has some force, for cities are not so apt to go into big schemes; but this is less true of gas and tramway projects than of other enterprises. The second is about as long as it is broad, for while public service companies are sometimes considered free game by the municipalities, the schemes of municipalities are freely opposed by individuals and companies, for they know that Parliament will amply protect them if they oppose and demand protective clauses. I am inclined to

the opinion that the third factor offers the principal explanation. The Parliamentary return above referred to shows that the expenditures of companies, whether opposing private bills or provisional orders or promoting provisional orders, are always upon the average considerably in excess of the expenditures of local authorities. Further, the proceedings of Parliamentary committees and the long lists of Parliamentary agents, counsel and expert witnesses in many of the hearings point in the same direction.

### Costs of Provisional Orders.

The second method of obtaining power to build and operate a gas, electric light or tramway undertaking in a specific locality is through a provisional order. This is a grant drawn up by some department of the central government in the same form as a bill, but which has no legal force until approved by Parliament. The procedure governing application, consideration and issuance of a provisional order is regulated largely by the rules of the department having jurisdiction, although of course the statutes specify certain requirements.

The chief advantage of the provisional order over a private bill is that it costs much less. The fees to be paid the central departments are small, the procedure is simple, and if any unusual powers are wanted, the company or municipality ordinarily does not attempt to get them through a provisional order but resorts to a private bill. The principal expenses incurred are for advertising, serving of notices, preparation of maps and plans, holding of inquiries and presentation to the department of expert opinion favoring the project. The heavy charges for Parliamentary agents, solicitors and continued hearings are wanting, so that the average order costs about £1,200 less than a private bill.

Judging from the regulations and the statutes, the scale of charges to companies and municipalities are practically the same. But that there is some difference in the amounts actually spent is indicated by the Parliamentary return above cited. From 1892 to 1898, the local authorities in England and Wales spent £141,474 in promoting 607 provisional orders, an average of £233. In the same period 117 orders were obtained by tramway, gas and electric lighting companies, costing £56,576, or £483 each; a difference of £250. But here again it should be noted that the average cost of *all* orders is less than of those relating to gas, electricity and tramways alone, so that the figures are not directly comparable. The average of £233 would be somewhat increased if gas, electric and tram orders could be separated from the others, but doubtless the difference would not be entirely obliterated, and the explanation of the difference is similar to that given above relative to private bills.

### Light Railway Orders.

The third method by which power to operate may be obtained is through a light railway order. This procedure is not applicable to gas or electrical undertakings, and indeed it was not ex-

pected at first that it would be used to authorize tramways, but it has been used for this purpose to some extent. The subject is more fully treated in the history of legislation in Great Britain, and it will suffice to say here that a light railway order is an order drawn up in the form of a bill, issued by the Light Railway Commissioners but having no legal effect until approved by the Board of Trade. It is analogous to a provisional order, if one substitutes the Board of Trade for Parliament and the Light Railway Commisioners for the Board of Trade. Virtually it is a delegation of legislative powers to administrative bodies.

The procedure in detail is very similar to that for a provisional order, but even more simple and slightly less expensive. Municipalities and companies are treated alike. The scale of charges applies equally to all. I have been unable to find a return showing the exact costs, but judging from the data given above the expenses for a municipal order are less than for an order promoted by a company. The explanation would be the same as that given above relative to private bills. In only one of the seven undertakings examined are light railway orders in force—the London United Company, which is operating lines under two orders.

## THE INCOME TAX.

The only tax paid directly to the central government is the income tax. The administrative machinery by which this tax is assessed and collected in England and Wales is in the hands of two sets of officials; one appointed by the central government, and the other selected practically by the local land tax commissioners. The persons named by the land tax commissioners and officially designated by Parliament appoint additional commissioners, assessors, usually two for each parish, collectors and such other clerical assistants as are needed. The officials named by the Crown are the commissioners of internal revenue, who name inspectors and surveyors to represent them locally and to supervise the execution of the law by the local officials.

As the Income Tax Act (5 and 6 Vict., c. 35), which is the basis of the present system, was passed prior to the introduction of electric lighting and tramways, the assessment of these undertakings differs somewhat from that for gas and water works. The latter come under "Schedule A" of the act, which declares that assessable value to be the profits for the one year preceding the date of assessment. This amount is determined by the assessor from data secured in a return made by each taxpayer giving a description of his property, its income, etc., and from such other information as he may obtain. This report soon finds its way to the surveyor, who goes over the assessment and approves or calls for a revision as he sees fit. The matter is next taken up by the local commissioners, who formally fix the assessable value, usually adopting the figures of the assessor unless a taxpayer appeals, in which case the commissioners hear the evidence and make a final decision. In London the procedure is somewhat different.

Electric supply and tramway undertakings are taxed under "Schedule D." The value is the average annual "full amount of profits or gains" for the three years preceding the date of assessment. The procedure begins with the preparation by the assessors of a list of those to be served with blank forms. When the forms are returned, the assessor tabulates them, fills up the blanks and delivers his return to the surveyor. The surveyor fixes the assessable values after consultation with the assessor and the taxpayer, and with the aid of such other information as he may have. His report then goes before the "additional commissioners," appointed by the commissioners who were named by the land tax commissioners. They review the entire report, raise or lower assessments, fill up the blanks, decide appeals from the surveyor's dcision and finally fix the assessable values, unless appeal is taken to the general commissioners or to the special commissioners in London, generally following the report of the surveyor.

The principal differences to be noted between the assessment of gas and water works, and electricity and tramway undertakings are the period considered and the method of fixing the value. In the former only *one* year is considered; in the latter *three* years. The former are assessed practically by the assessor; the latter by the surveyor. But this difference is not essential; for although the assessor is a local official and the surveyor an agent of the central government and moved from one district to another, the land tax commissioners and still more the appointees of the local income tax commissioners are so far removed from the taxpayer that they are quite independent. Further, the surveyor and inspectors of the central government indirectly have considerable influence and thus centralize the administration much more than it would seem at first. As a result the principles followed by the assessors and surveyors are very nearly uniform throughout the country.

When once the assessment value is fixed, the remainder is simple. The tax rate is fixed annually by Parliament at —s. or —d. in the pound. For 1904 and 1905 it was 1s. in the pound, or 5 per cent. This means that if a company or department has been assessed at £100,000, the tax to be paid to the collector upon January 1 amounts to £5,000. The rate varies from year to year according to the needs of the central government. Since 1842 the lowest rate was 2d. in 1874 and 1875, and the highest 1s. 4d. in 1855 and 1856. It was 1s. 3d. in 1903.

Whether municipal undertakings shall be assessed like private companies was settled many years ago.[1]

Both are upon the same footing, the universal test being whether there is a profit. If there is, the undertaking is assessed; if there is none, it is not assessed. From this it is evident that an undertaking may escape the income tax entirely by fixing its charges so low that there is a deficit. A company is not likely to

[1] See *In re Glasgow Gas Commissioners* (1876), 1 Tax Cas., 122, and other cases cited in Michael and Will, *The Law Relating to Gas and Water*, Fifth Ed., pp. 51 and 52.

do this intentionally; neither is a municipality unless there are great benefits to be gained by the public through such a course. It has not been done in any of the undertakings examined, but in the case of water works it is quite common in Great Britain for municipalities to fix the rates of charge to the consumer very low and to levy a "water rate," that is, to raise part of the revenue by taxation.

Coming now to the question whether in actual practice company and municipal undertakings are valued equally (the rate may be dismissed, for it is the same everywhere), it is necessary to ascertain somewhat more definitely what are considered profits. First, as to gas works. Through the courtesy of the managers of two of the undertakings, I have secured the following statements showing how the income tax was assessed for the years in question. (The shillings and pence have been omitted.)

SOUTH METROPOLITAN GAS COMPANY.
Income Tax for the Year 1903, ending April 5, 1904.

| | | |
|---|---|---|
| Profit to June 30, 1903 | £224,788 | |
| " " December 31, 1903 | 222,555 | |
| | | £447,343 |
| Add: | | |
| Income tax on salaries | £1,222 | |
| Interest received (June) | 934 | |
| " " (December) | 539 | |
| Rents not locally assessed | 1,038 | |
| Leasehold renewal fund | 300 | |
| | | 4,033 |
| | | £451,376 |
| Deduct: | | |
| Rents receivable (June) | £1,895 | |
| " " (December) | 1,479 | |
| Interest on loans (June) | 2,746 | |
| " " " (December) | 2,648 | |
| | | 8,768 |
| Assessment value | | £442,608 |
| Income Tax at 1s. in the £ | | £22,130 |

SHEFFIELD UNITED GAS LIGHT COMPANY.
Income Tax for the Year 1904, to April 5, 1905.

| | | |
|---|---|---|
| Profit for half year to June 30 | £45,231 | |
| Profit for half year to December 31 | 52,859 | |
| | | £98,090 |
| Add: | | |
| Rents payable (not locally assessed) | £309 | |
| Depreciation | 2,979 | |
| Income tax, surplus dividend | 1,171 | |
| Bank interest | 136 | |
| Donation to University | 1,000 | |
| | | 5,595 |
| | | £103,685 |
| Deduct: | | |
| Rents receivable (tax paid) | | £197 |
| Assessable value | | £103,488 |
| Income Tax at 1s. in the £ | | £5,174 |

A comparison of these statements with the financial reports for the years in question and the provisions of the statutes shows that the gross profits are taken as a starting point, gross profits being the sum remaining after the manufacturing, distribution and general expenses, including rates and taxes, have been deducted from the receipts from the sale of gas and residuals, meter and stove rents and other receipts. To the gross profits there are added any other revenues, such as interest on bank balances or loans, the income tax for the previous year, rents payable if not locally assessed, and such other items as have been charged against revenue which are not properly chargeable as operating costs, as depreciation over and above the ordinary expense for repairs and maintenance, reserve fund payments, etc. Deductions are made for rents receivable where tax has already been paid, interest on loans from which tax has been deducted, and any other items that have been paid out of funds which should have been charged to revenue account. In most cases it is easy to decide whether an item should be included or excluded; but when it comes to drawing the line between maintenance and repairs, and depreciation charges, the problem is much more difficult. The practice of assessors is not entirely uniform upon this point, but the principle generally followed is to allow such amounts to be deducted, either in operating costs or in a special charge for depreciation, as will provide for the maintenance of the plant at its original efficiency, especially if the expenditures for which allowance is claimed have actually been made.

In the main the same principles apply to electric supply and tramway undertakings. But is should be noted that where a system is developing rapidly and the gross profits are increasing considerably from year to year, a three-year average is noticeably more favorable to an undertaking than if the assessment value were the profits for the year last preceding. In the statements given below for the electrical undertakings, the assessable value upon the basis of a three-year average is from 20 to 30 per cent. below what it would have been if the last year alone had been taken, barring accidents.

The following examples of income tax statements will suffice to show how the assessment value is arrived at:

## MANCHESTER MUNICIPAL ELECTRICITY DEPARTMENT.

### Return for Income Tax Assessment during year ending April 5, 1906.

| *Years ending March 31.* | | | | *1903.* | *1904.* | *1905.* |
|---|---|---|---|---|---|---|
| Profit as per published accounts | | | | £84,854 | £113,480 | £127,880 |
| Deduct: Gross profit on supplies to Corporation non-trading departments | | | | 2,597 | 4,462 | 4,448 |
| | | | | £82,257 | £109,018 | £123,432 |
| Deduct further allowances: | *1903.* | *1904.* | *1905.* | | | |
| Bank interest (paid without deduction of tax) | £1,677 | £160 | *Cr.* £27 | | | |
| Cottage rental (assessed under Schedule A) | 58 | 54 | 49 | | | |
| Interest on public works loan (paid without deduction of tax) | 4,216 | 4,090 | 3,927 | | | |
| Discount on corporation bills and consideration money on renewal (paid without deduction of tax) | 1,012 | 544 | .... | | | |
| Interest on consumers' deposits (paid without deduction of tax) | 130 | 158 | 196 | | | |
| Expenses re vibration and explosion (taken from reserve fund) | .... | .... | 15,312 | 7,093 | 5,006 | 19,457 |
| | | | | £75,164 | £104,012 | £103,975 |
| Add disallowances: | | | | | | |
| Chief rent | | | | 1,405 | 1,013 | 1,118 |
| Income tax | | | | 580 | 281 | 842 |
| Thrift fund contribution | | | | 310 | 339 | 369 |
| Commission and stamp duty on loans | | | | 1,699 | 1,125 | 656 |
| Law charges re transfer of provisional orders | | | | 1,339 | 265 | .... |
| Renewals, provision for future | | | | .... | 25,000 | 25,000 |
| | | | | £80,497 | £132,035 | £131,960 |
| Total for three years | | | | | | £344,492 |
| Average yearly profit | | | | | | £114,830 |
| Income tax at 1s. in the £ | | | | | | £5,741 |

## NEWCASTLE-UPON-THE-TYNE ELECTRIC SUPPLY COMPANY LIMITED.

Statement prepared for Income Tax for year ending April 5, 1905.

| | | |
|---|---|---|
| Profit for year 1902 | | £27,950 |
| Profit for year 1903 | | 43,539 |
| Profit for 1904 as per account | £59,940 | |
| Add items deducted but not allowed for Income Tax purposes— | | |
| Depreciation on office furniture | 185 | |
| Income tax | 1,158 | |
| Ground rent | 52 | |
| Interest received, tax not deducted | 78 | |
| | £61,413 | |
| Deduct interest paid, tax not deducted | 763 | |
| | | 60,650 |
| Total for three years | | £132,139 |
| Average yearly profit | | £44,046 |
| Deduct schedule A assessments— | | |
| Roberts Terrace, Wallsend | 74 | |
| Works, Neptune Bank | 15 | |
| Offices, Neptune Bank | 250 | |
| Deduct allowance for depreciation | £6,000 | |
| | | 6,339 |
| Income tax assessment | | £37,707 |
| Income tax at 1s. in the £ | | £1,885 |

## GLASGOW MUNICIPAL TRAMWAYS.

Assessment for Income Tax for Year ending April 5, 1906.

| *Years ending May 31.* | *1902.* | *1903.* | *1904.* | |
|---|---|---|---|---|
| Net profits | £326,511 | £354,326 | £367,334 | |
| Deduct proportion of permanent way renewals allowed | 2,338 | 2,071 | 4,611 | |
| | £324,173 | £352,255 | £362,723 | |
| Add horse renewals | 1,884 | 166 | 158 | |
| | £326,057 | £352,421 | £366,881 | |
| Total for three years | | | | £1,041,359 |
| Yearly average | | | | 347,120 |
| Deduct depreciation for year 1904-5 as per following page | | | | 48,570 |
| Assessment value | | | | £293,550 |
| Income tax at 1s. in the £ | | | | £14,927 |

*Detail of Net Profits for* 1903-1904.

| | | |
|---|---|---|
| Gross Revenue | | £724,851 |
| Less Working Expenses | £356,820 | |
| Rents on which tax has been paid | 1,108 | |
| Interest, tax deducted | 760 | |
| Plus Feu duties and teinds (tax deducted) | 1,066 | |
| Parliamentary expenses | 105 | |
| | | 357,517 |
| | | £367,334 |

## GLASGOW MUNICIPAL TRAMWAYS.

### Tax Depreciation for Year 1904-5.

| | *Gross Amount as at May* 31, 1904. | *Less Depreciation for Year Ending May* 31, 1902-3-4. | *Net Amount.* | *Additions During Year to May* 31, 1905. | *Total Capital on Which Depreciation Is Allowed for Year Ending May* 31, 1905. | *Rate Per Cent.* | *Depreciation for Year Ending May* 31, 1905. |
|---|---|---|---|---|---|---|---|
| Ducts (excluding manholes)..... | £158,561 | £13,338 | £145,223 | £1,606 | £146,829 | 3 | £4,405 |
| Cables ..... | 209,535 | 17,306 | 192,229 | 5,187 | 197,416 | 3 | 5,922 |
| Poles and rosettes..... | 68,463 | 3,651 | 64,812 | 2,727 | 67,539 | 2 | 1,351 |
| Section boxes..... | 9,668 | 748 | 8,920 | 374 | 9,294 | 3 | 279 |
| Telephones ..... | 2,790 | 278 | 2,512 | 336 | 2,848 | 5 | 142 |
| Depot fittings..... | 6,188 | 348 | 5,840 | .... | 5,840 | 2 | 117 |
| Pinkston plant..... | 291,419 | 40,011 | 251,408 | 1,862 | 253,270 | 5 | 12,663 |
| Substation plant..... | 94,138 | 13,587 | 80,551 | .... | 80,551 | 5 | 4,028 |
| Car works machinery..... | 15,241 | 2,937 | 12,304 | 1,655 | 13,959 | 7½ | 1,045 |
| Coplawhill granary..... | 115 | 9 | 106 | 104 | 210 | 7½ | 16 |
| Per. way plant, etc..... | 3,118 | 550 | 2,568 | 538 | 3,106 | 7½ | 233 |
| Rolling stock..... | 380,657 | 48,656 | 332,001 | 24,693 | 356,694 | 5 | 17,835 |
| Punches ..... | 3,812 | 668 | 3,144 | 1,208 | 4,352 | 7½ | 326 |
| Furniture ..... | 4,574 | 572 | 4,002 | 152 | 4,154 | 5 | 208 |
| Total ..... | | | | | | | £48,570 |

Whether municipal undertakings are valued at a higher or a lower rate than companies is somewhat uncertain, for there are great differences in local conditions. There is no absolute standard with which the assessment may be compared and the question thus settled beyond peradventure, but conclusions will probably be reached as accurately as in any other way if the amount of the assessment is computed per thousand cubic feet of gas sold, per unit (k. w. h.) of electricity sold or per car mile. The facts for all of the municipal and company plants investigated are given in the following table:

INCOME TAX ASSESSMENTS.

| *Gas Undertakings.* | *Amount.* | *Per. M. Cu. Ft. Sold (Pence).* |
|---|---|---|
| Birmingham | £197,969 | 7.67 |
| Glasgow | 133,842 | 5.52 |
| Manchester | 170,663 | 8.57 |
| Leicester | 102,120 | 13.36 |
| Municipalities | £604,594 | 7.79 |
| London—So. M. | £442,608 | 8.75 |
| Newcastle | 113,011 | 9.39 |
| Sheffield | 103,323 | 8.87 |
| Companies | £658,942 | 8.88 |

| *Electric Supply.* | *Amount.* | *Per Unit Sold (Pence).* |
|---|---|---|
| Manchester | £79,798 | .569 |
| Liverpool | Appealed | (?) |
| Glasgow | 35,542 | .467 |
| St. Pancras | 21,877 | .789 |
| Municipalities | £137,217[1] | .562[1] |
| Newcastle—Supply | £41,840 | .331 |
| Newcastle—District | 16,197 | .749 |
| London—City | 110,568 | 1.266 |
| Westminster | 85,260 | 1.306 |
| St. James | 43,909 | 1.348 |
| Central | 13,843 | .468 |
| Companies | £311,617 | .866 |

[1] For three undertakings only.

| *Tramways.* | *Amount.* | *Per Car Mile (Pence).* |
|---|---|---|
| Glasgow ..... | £206,478 | 2.762 |
| Manchester ..... | 133,912 | 2.276 |
| Liverpool ..... | Appealed | (?) |
| London C. C..... | 65,227 | 1.432[2] |
| Municipalities ..... | £405,617[1] | 2.264[1] |
| London United ..... | Appealed | (?) |
| Dublin ..... | Est. 89,000 | 2.870 |
| Norwich ..... | 10,590 | 2.266 |
| Companies ..... | (?) | (?) |

This table clearly indicates that there is great variety between the plants; certain undertakings are taxed one-half what others pay, and in the case of the Newcastle Supply Company and the St. James company the difference is very much greater. It is also clear that municipal plants, either group by group or collectively, are assessed at a lower figure than the companies. One hesitates to attempt an explanation, but probably it is due in part to the higher amounts charged to maintenance, repairs and renewals by the municipalities, in part to the fact that the companies are more anxious to make a large profit, and in part to the different standards adopted by the assessors.

As the rate of taxation is the same everywhere—5 per cent. of the assessment—the amounts paid vary in the same ratio as the assessments. But the amount levied upon an undertaking is not necessarily the amount actually charged in the accounts as income tax. The difference comes about in this way: When interest or dividends are paid, a deduction is sometimes made therefrom for the income tax thereon, and only the net amount is charged in the accounts. For example, the Glasgow tramway undertaking was taxed, in the year under review, £10,324; of this amount, £4,890 were deducted from the interest upon the debt when paid and the net amount, £5,434, charged in the accounts, the charge for interest being the gross amount before deducting income tax. The Central Electric Company collected all of its tax from the holders of its securities and therefore charged no income tax on its books. Of course, the holders of securities are not obliged to pay the tax twice, and if it is deducted from their dividends and interest when paid, the net amount is not again taxed. It will be seen from the following table that neither course is followed by all municipalities or all companies, and that to judge from the amounts charged in the accounts as to the extent to which the undertakings are assessed for the income tax would be misleading.

[1] For three undertakings only.

[2] Computed on the basis of electric mileage, not including horse-car mileage, as the latter is run at a loss owing to the interference with traffic due to reconstruction.

INCOME TAX PAYMENTS.

| | Tax Actually Levied. | Tax Charged in Accounts (Schedules IV). | Difference. | Tax Per M. Cu. Ft. (Pence). Levied. | Charged. |
|---|---|---|---|---|---|
| *Gas Undertakings—* | | | | | |
| Birmingham | £9,899 | £9,899 | .... | .38 | .38 |
| Glasgow | 6,692 | 6,692 | .... | .28 | .28 |
| Manchester | 8,533 | 4,785 | £3,748 | .43 | .24 |
| Leicester | 5,106 | 5,106 | .... | .67 | .67 |
| Municipalities | £30,230 | £26,482 | £3,748 | .39 | .34 |
| London | £22,130 | .... | £22,130 | .44 | .... |
| Newcastle | 5,850 | £5,850 | .... | .48 | .48 |
| Sheffield | 6,052 | .... | 6,052 | .52 | .... |
| Companies | £34,032 | £5,850 | £28,182 | .46 | .08 |
| *Electric Supply—* | | | | *Per unit sold.* | |
| Manchester | £3,990 | £842 | £3,148 | .029 | .006 |
| Liverpool | Appealed | .... | (?) | (?) | .... |
| Glasgow | 1,777 | 367 | 1,410 | .023 | .005 |
| St. Pancras | 1,094 | 705 | 389 | .039 | .025 |
| Municipalities | £6,861[1] | £1,914[1] | £4,947[1] | .028[1] | .008[1] |
| New.—Supply | £2,092 | .... | £2,092 | .017 | .... |
| New.—District | 810 | 810 | .... | .038 | .038 |
| London—City | 5,531 | 5,531 | .... | .063 | .063 |
| Westminster | 4,263 | 4,263 | .... | .069 | .069 |
| St. James | 2,205 | .... | 2,205 | .068 | .... |
| Central | 728 | .... | 728 | .025 | .... |
| Companies | £15,629 | £10,604 | £5,025 | .043 | .030 |
| *Tramways—* | | | | *Per Car Mile.* | |
| Glasgow | £10,324 | £5,434 | £4,890 | .138 | .073 |
| Manchester | Appealed | 2,983 | (?) | (?) | .051 |
| Liverpool | Appealed | 5,877 | (?) | (?) | .117 |
| London C. C. | 3,261 | 3,261 | .... | .072[2] | .072[2] |
| Municipalities | (?) | £17,555 | (?) | (?) | .077 |
| London United | Appealed | £4,100 | (?) | (?) | .134 |
| Dublin | £4,450 | 4,450 | .... | .144 | .144 |
| Norwich | 531 | 189 | 342 | .118 | .042 |
| Companies | (?) | £8,739 | (?) | (?) | .131 |

## LOCAL TAXATION.

### The Machinery of Rating.

The system of local taxation in Great Britain is based upon the Elizabethan Poor Law of 1601. At that time the care of the poor was almost the only function calling for obligatory contribu-

[1] For three plants only.

[2] See note (2) page 532.

tions, and the poor rate was the principal and often the only local tax. As more money had to be raised for new functions or as the financial needs of old duties increased, other rates were added to the poor rate, the assessment being the same for all. The principal ones thus added were the highway, watch (police), sanitary, cemetery, drainage, lighting, school, county and borough rates. At first the principle of assessment was not clearly defined, but as taxes increased and rates came to be levied regularly everywhere, the annual rent of land and buildings was generally adopted. Since the seventeenth century the whole system has been extended, elaborated and perfected, but as it has all been done by piecemeal and as no far reaching revision has ever been made, the system is most intricate and confused. Only the salient features of the method of taxing public utilities need be given here.

The valuation of property for rating purposes is a function ordinarily belonging to overseers and the assessment committee in England, and the county councils and burgh councils in Scotland. The overseers are householders appointed for each parish by the parish council or parish meeting in small parishes, or the justices, borough council or other local representative body in urban parishes. In London, the borough councils are now the overseers. Usually they are appointed by the parish council or the justices and seldom by the same authority that would be managing the public utility to be valued. They are generally from two to four in number except in small parishes, where often only one is appointed. The assessment committee, consisting of from 6 to 12 members, is appointed from among their number by the guardians of the union—an elective body which has charge of the administration of poor relief—and in London by the borough council when the union is entirely within one borough. In Scotland similar officials are appointed by the burgh or county councils.

The valuation list for each parish in England is made up by the overseers, with the assistance of subordinate officials. Ordinarily it is a copy of the last approved list, with such alterations as may need to be made because of any change in the value of any property. After an opportunity has been given for examiation by the ratepayers, it is transmitted to the assessment committee, who hear and decide all complaints about valuations whether of the property of the complainant or of others. When all cases have finally been disposed of and the values determined to the satisfaction of the committee, the list becomes the legal basis for the assessment of the rates, unless upon appeal to the courts by a ratepayer the valuation is upset.

No limit is fixed for the duration of the valuation list outside of London, and it remains in force with such alterations and additions as are made from time to time until a new list is ordered. In London a revaluation must be made every five years—1900, 1905, 1910, etc.—but a supplementary list may be made every year to alter any values which have changed during the year. London also differs from the rest of Great Britain in that a copy of the list made by the overseers is sent to the income tax surveyor, and he

may alter the gross value of any property and transmit his copy of the list so altered to the assessment committee. When the committee has fixed the gross value, this becomes the gross value for the local rates from which the statute deductions are made.

The Scottish system for the valuation of property generally is similar, except that the assessors appointed by the burgh and county authorities work with the surveyors of the Inland Revenue Office to a considerable extent. Appeal from the appraisal of the assessors may be taken to the county valuation committee or the magistrates of the burgh, whose decision is final unless recourse is had to the courts. But in the case of railways, in order to avoid the varying and conflicting methods of unrelated local authorities, a special assessor of railways and canals has been created for the whole of Scotland. His duty is to value these undertakings as a whole and to allocate to each of the respective parishes its share. He is appointed by the Crown and is wholly independent of the local authorities. Gas, electricity, tramways and other similar undertakings have the option of being assessed by him if liable to be rated in more than one parish, and as a matter of fact are so assessed.

From this brief outline, it is evident that the local officials are left free to act very independently; for there is no central supervision or control, as in the case of the income tax, except in Scotland and somewhat in London. Further, the statutes use only general terms and are not explicit either as regards the property to be valued or the principles of valuation. The result is that local officials often adopt quite different standards and rules, so that tramways, for example, are not valued alike in all parishes, as we shall see. The decisions of the courts have brought about some uniformity, but only a few cases are ever taken into court, and a wrong method of valuation often goes unchallenged, unless a ratepayer considers himself injured thereby.

The gross valuation thus fixed is not necessarily the value upon which the local rates are levied, for all property is valued even though it may be exempt. There are also deductions to be made for various reasons upon certain classes of property, and the ratable value of any property or of the whole parish is not known until the exempt property and other deductions have been subtracted from the gross valuation. If a county or a borough council believes that the ratable value as thus found is not a fair criterion of the true value, it may make an independent valuation for the county or borough. This is seldom done, however.

When the ratable value has finally been established and when each rating authority has determined the amount to be raised by taxation for its needs, the fixing of the exact rates per pound of ratable value is a simple mathematical problem.[1] The next step

[1] The rate is quoted not as such a percentage of the ratable value or as so many pounds in a hundred or one thousand, but as s. d. in the pound. In other words, if the rate is 7s. 6d., a person having property rated at £1,000 will pay a tax of £375. Of course the rate is determined by dividing the amount to be raised, reduced to shillings or pence, by the total ratable value.

is to compute the amount each ratepayer owes and to serve notice upon him. An agent of the guardians usually collects the amounts due from each ratepayer, and each local authority is paid the sums due it. However, the town councils may collect their rates if they please, and this has been done in a number of cases with a considerable saving in expense, owing to the substitution of one central bureau for a number of small parochial bureaus.

### Principles of Valuation.

The machinery for the valuation of property is comparatively simple, but the manner of determining the value of each piece of property is not simple. Theoretically property is to be assessed at its annual net rental, viz., what a hypothetical tenant might be expected to pay the owner from year to year, if he (the tenant) were to pay all rates and taxes, less the probable cost of repairs, insurance and the other expenses necessary to keep the property in a state to command that rent. In the case of a house rented annually subject to the conditions just stated, the ratable value can easily be fixed; but gas and electric works are almost never rented, and tramways very seldom, so that it is extremely difficult to say what a hypothetical tenant would pay. As there is no actual rental to serve as a basis, the probable rental must be estimated, or determined by certain arbitrary rules. Further, a public utility usually extends through several different parishes, thus making the problem still more complicated by the difficulty of apportioning the value properly between the different areas. The statutes give few directions; they lay down only general principles and leave the local officials and the courts to interpret the law as each case arises.

One of the most important principles generally accepted is that existing, not future, value is the measure of ratable value, but it is assumed that the hypothetical tenant has a reasonable expectation of continuing his tenancy for more than one year. This prevents upon the one hand an extremely low valuation, estimated from what a tenant would pay if he could operate the plant only for the year in question; it excludes upon the other hand practically all consideration of the future value of the rights and franchises when population has become denser and operation more profitable. The test is the present value to the present occupier. In other words, the value of the franchise is assessed, as well as the physical property, but it is assessed at its present income value and not at its capitalized value in view of what the income may be in the future. In view of the continued growth of cities and the increasing value of rights in the streets, this means that on the basis of present income, the capitalized value of the assessment is less than the capitalized value of all the securities of the undertaking at their market value, which takes account of prospective profits to some extent at least.

The strict application of this principle of rating would lead to profits as shown by the accounts as the sole standard, but it is

not strictly followed. If there is evidence to show that profits or rent actually paid are not true tests of value, if there is evasion or a manifest failure to utilize the property to advantage, the authorities and the courts will brush profits and rents aside. Further, if a municipality has intentionally placed the charges for a service very low, as is not infrequently done so as to give the user or consumer every advantage, the actual profits are not considered as final, unless the statutes forbid higher charges, which is practically never the case. Practice varies as to how the ratable value shall be determined in such cases. In some places the net rental is estimated from value of other plants and the probable profits that could be made at reasonable charges. In others a percentage of the capital outlay is taken, the ordinary rates for schools, asylums and sewage works—4 per cent. on the cost of land and 5 per cent. on the cost of buildings—being often applied. Where only this is done, it is evident that a large amount is not included for the value of the franchise, but if the undertaking is supplying a commodity or service at such a low figure that the net profits amount only to 4 per cent. or 5 per cent., the franchise is evidently not worth a large sum as long as prices are kept at such low figures.

Municipal undertakings are to be assessed and rated equally with company plants. There is some difference, as will be seen, between the practice in Scotland and in England, and between different areas within each country, but not between company and municipal plants as such in either, so far as the law is concerned. Until 1865 the theory was quite generally accepted that unless the statutes specifically required the rating of municipal property, it was to be exempt because devoted to public purposes. In that year the House of Lords repudiated this theory in the case of *Jones vs. Mersey Docks* (11 H. L. Cas., 443), but an act of Parliament was held to have given statutory exemption, and it was not until 1876 that the atmosphere was cleared by the repeal of this act. At present it is universally recognized that municipal corporations and all similar bodies are to be assessed and taxed on the same principles as private individuals or companies. Probably this is an outgrowth of the theory that it is property that is taxed rather than the owner thereof. The only instance where the decisions seem to indicate that an exception might be made is where taxation would merely result in the taking out of one pocket to put in another. Such an occurrence is extremely rare as far as public utilities are concerned, for a public utility is operated by only one local authority in a given area, and there are so many other authorities that do not have any control over it whatever and do not share its profits, that they naturally insist that it be taxed for their benefit. Further, if an authority were to exempt a municipal undertaking from paying rates, any ratepayer could appeal from its decision and by legal procedure force the authority to place the plant upon the list.

For many years it was not conclusively settled that an undertaking should be rated for the use of the streets as well as for the plant situated upon private property. An early decision in 1823

held that pipes in highways were ratable, but not until 1895 was the last vestige of a claim for a contrary decision disposed of. Pipes, mains, wires, tracks, subways and everything else which yields an income or may ordinarily be made to yield an income, are to be rated and taxed. Goodwill is not supposed to be valued, but in actual practice it is often found impossible to separate the income from this source from the other profits. In the undertakings examined, no instance was found where any allowance had been made.

**Valuation of Gas Works.**

When one comes to apply these principles to specific cases, the difficulties begin, and as each class of undertakings differs somewhat from the others, each will be discussed separately; gas works first. As already stated, gas works are practically never leased by the owners. In the search for a method of determining what a hypothetical tenant would pay, the assessment officials have generally fallen back upon profits as shown by the books of the undertaking, and the courts have upheld in numberless cases valuations arrived at as follows:

The actual gross receipts from the gas business were used as a starting point, from which were deducted actual working expenses, tenant's rates and taxes, a sum for tenant's profits and risks, and the normal cost of repairs, renewals and insurance of buildings, stations, plants and mains, the remainder thus obtained being taken as the gross assessment valuation. If repairs, etc., are included in working expenses, they should not, of course, be deducted a second time.

To determine what deductions should be made for tenant's profits, certain fixed percentages have been adopted, based upon the principle that a tenant could not be found if he had to pay over all of the profits to the owner. He can be expected to rent the works only upon the condition that he receive out of the profits an amount sufficient to pay interest upon the working capital he provides, to pay for risks and casualties, and to leave for him a reasonable profit. It is customary to allow 5 per cent. on working capital for the first, 2½ per cent. for the second and 10 per cent. for the third, making in all 17½ per cent. Working capital is considered to include stocks, such as coal, residuals and stores, consumers' meters, stoves for hire, tools, loose machinery, etc., at their present actual value, not at their original cost, and a certain proportion of operating costs (working expenses), usually about four-twelfths—4 months' expenses.

The valuation having been found by this process, the next step is to determine the ratable value—the amount upon which the rates shall be computed and paid. The only thing to be done is to ascertain whether any deductions have been authorized by statute or by the rating authorities. If there are none, the value as above described becomes the ratable value; if there are, they must be subtracted and the remainder becomes the ratable value.

If the works are entirely within one rating area, usually the parish, the problem ends at this point; but where they extend into two or more districts, there is the further difficulty of determining how the property shall be divided. Shall the value for the whole be divided among the districts according to the miles of mains in each area, or the total sales, or the net profits, or the situs of the physical property; or shall each area fix its own value arbitrarily and without consultation with the others; or shall an attempt be made to apportion the total value according to the amount of productive property in each area? In practice a number of methods have been used which have varied widely, but at present the one most commonly adopted is to determine the valuation of the whole system by the method given in the above paragraphs. A distinction is then made between property "directly productive of profit" and "indirectly productive." The first includes the mains and services that deliver gas directly to the consumer; the second, the stations where gas is made and stored, and the mains that carry gas from one station to another or from the stations to the parishes where it is sold. From the value of the whole system, the rateable value of the "indirectly productive" part is subtracted and apportioned to the areas in which it is located. The remainder, the value of the directly productive part, is divided among the parishes according to the gross or net receipts in each. In determining the value of the "indirectly productive" property, it is treated as mere land, buildings, etc., but deriving some additional value from their capacity of being applied to gas purposes; frequently a percentage of the capital cost is taken.

Let us now take a concrete case, that of the Newcastle and Gateshead gas company. The valuation is for the year 1903 and is based upon the receipts, working expenses and profits for the three years 1900, 1901 and 1902. Only the figures for the Newcastle Union are given, for they cover every point of practice.

| | | | |
|---|---|---|---|
| **Receipts for the average of the three years 1900,1901 and 1902:** | | | |
| Gas | | | £251,415 |
| Meter and stove rents | | | 13,335 |
| Residuals: | | | |
| Coke | | | 76,190 |
| Breeze | | | 358 |
| Tar | | | 15,545 |
| Sulphate of ammonia | | | 18,916 |
| | | | £375,759 |
| **Working Expenses (same period):** | | | |
| Manufacture: | | | |
| Coals | £164,726 | | |
| Wages | 43,317 | | |
| Purification | 10,414 | | |
| Salaries | 4,028 | | |
| Repairs | 28,989 | | |
| | | £251,474 | |
| Distribution: | | | |
| Salaries and wages | £5,635 | | |
| Repairs and maintenance | 8,026 | | |
| Repairs, meters | 2,751 | | |
| Repairs, stoves | 2,252 | | |
| | | 18,664 | |

| | | | |
|---|---|---|---|
| Public lamps | | £699 | |
| Management: | | | |
| Directors | £1,821 | | |
| Salaries | 3,257 | | |
| Salaries collectors | 1,700 | | |
| Stationery | 1,438 | | |
| General charges | 1,308 | | |
| Official auditor | 150 | | |
| Law and parliamentary charges | 169 | | |
| | | 9,843 | |
| Rates | | 8,735 | |
| | | | £289,415 |
| Net Receipts | | | £86,344 |
| Of this sum 65 per cent. is earned in Newcastle. This is equal to | | £56,123 | |
| Deduct interest on tenant's capital (see below) | | 28,833 | |
| | | | £27,290 |
| Statutable Deductions: | | | |
| Insurance | | £440 | |
| The Gross Assessment of Redheugh Gas Works, £12,261, of which 62.57 per cent. is due to Newcastle | £7,672 | | |
| Less 22.93 per cent. of gas made at Elswick Works and consumed outside of Newcastle | 721 | | |
| | | 6,951 | |
| | | | 7,391 |
| | | | £19,899 |
| One-fifth deduction | | | 3,979 |
| | | | £15,920 |
| Add for certain properties only entitled to a deduction of one-sixth | | | 169 |
| | | | £16,089 |

## Tenant's Capital Charges.

| | | |
|---|---|---|
| Working Expenses (given above) | | £289,415 |
| Working Capital: | | |
| Working Expenses: Five months' expenditure, i. e., five-twelfths of £289,415 | | £120,590 |
| Less four months' receipts from automatic meters. | £6,600 | |
| Three months' receipts from residuals | 27,752 | |
| | | 34,352 |
| | | £86,238 |
| Stocks in hand: | | |
| Coals | | £6,136 |
| Coke | | 2,055 |
| Tar and ammoniacal liquor | | 5,308 |
| Meters | | 2,329 |
| Stoves | | 2,450 |
| Other stores | | 13,892 |
| Meters on hire | | 84,399 |
| Stoves on hire | | 50,699 |
| Cash in bank | | ..... |
| Working capital | | £253,476 |
| Tenant's Capital: | | |
| Interest on £253,476 at 5 per cent | | £12,674 |
| Trade profits on £253,476 at 10 per cent | | 25,348 |
| Risks and casualties on £253,476 at 2½ per cent | | 6,337 |
| | | £44,359 |
| Proportion due to Newcastle (65 per cent.) | | £28,833 |

## Distribution of Assessment in Newcastle Union.

| *Parish or Township.* | *Description of Property.* | *Situation of Property.* | *Gross Rateable Value.* | *Net Rateable Value.* |
|---|---|---|---|---|
| St. Nicholas..... | Disused gas holder, cottage and land... | Forth Banks..... | £240 | £200 |
| St. Johns..... | Offices ..... | Grainger Street West..... | 604 | 503 |
| | Forth Banks works..... | Forth Street..... | 240 | 200 |
| | Show rooms in basement..... | Grainger Street West..... | 150 | 125 |
| | Painters' shop, etc..... | Slaters Yard, Orchard Street..... | 56 | 47 |
| | Works, late Pooleys..... | South Street..... | 120 | 100 |
| All Saints..... | Workshop ..... | Pearsons Bldgs., Cut Bank..... | 42 | 35 |
| Byker ..... | Gas holder and tank..... | St. Anthonys..... | 2,150 | 1,720 |
| Heaton ..... | Repairs shop..... | Heaton Road..... | 52 | 43 |
| Westgate ..... | Workshops..... | Diana Street..... | 75 | 62 |
| Elswick ..... | Land and buildings..... | Elswick Gas Works..... | 3,300 | 2,750 |
| | Gas holders, machinery and retorts..... | Elswick Gas Works..... | 1,700 | 1,360 |
| | Governor house, land and buildings..... / Governor valves and pressure indicator | Malden Street..... | 240 | 200 |
| Mains as per attached statement ..... | | ..... | 10,928 | 8,744 |
| | | | £19,897 | £16,098 |

VALUATION OF MAINS, PIPES AND SERVICES, NEWCASTLE UNION.

| *Parish or Township.* | *Net Revenue for Gas (1902).* | *Gross Rateable Value.* | *Net Rateable Value.* |
|---|---|---|---|
| St. Nicholas | £8,633 | £617 | £494 |
| St. Johns | 13,459 | 964 | 771 |
| All Saints | 12,043 | 925 | 740 |
| St. Andrews | 20,232 | 1,448 | 1,159 |
| Iesmond | 14,592 | 1,044 | 835 |
| Byker | 9,254 | 662 | 530 |
| Byker (St. Anthony's Burial D.) | 2,575 | 184 | 147 |
| Heaton | 7,318 | 524 | 419 |
| Westgate | 13,426 | 898 | 719 |
| Elswick | 43,669 | 3,126 | 2,501 |
| Benwell | 7,491 | 536 | 429 |
| Fenham | 9 | .... | .... |
| | £152,701 | £10,928 | £8,744 |

Briefly summarized this statement is as follows:

| | |
|---|---|
| Receipts for the average of three years | £375,759 |
| Working expenses, including repairs and rates, ditto | 289,415 |
| Net receipts for the whole undertaking | £86,344 |
| Newcastle's share, 65 per cent. of whole | 56,123 |
| Tenant's allowance, 65 per cent | 28,833 |
| Gross assessment for Newcastle | £27,290 |
| Statutable deductions | 11,201 |
| Rateable value of all property in Newcastle Union | £16,089 |
| Rateable value of land, buildings, etc., ditto | 7,345 |
| Rateable value of mains, pipes and services, ditto | £8,744 |

Which was apportioned among the parishes in the Newcastle Union according to the receipts from the sales of gas to private consumers in each parish.

An examination of the valuation and a comparison with the accounts of the company reveals several points to be noted. (1) The receipts and working expenses were averaged for three years instead of one as ordinarily done. (2) Receipts did not include rents from property and miscellaneous services; these were net payments, rates having already been deducted. (3) Certain items of expense, such as bad debts and damages which were supposed to be covered by the allowance to the tenant of 17½ per cent. on tenant's capital, were not included in working expenses, and therefore were not deducted from receipts. (4) The net receipts were divided among the unions according to the amount earned in each, and not according to the theory above, viz., a separation of the property into "directly productive" and "indirectly productive." But under statutable deductions a correction was made so as to deduct such a proportion of the value of the works outside of the

union as the gas made outside but consumed within bore to the whole value of the works outside, and to add such a proportion of the value of the works inside the union as the gas made inside but consumed outside bore to the whole value of the works inside. (5) When it came to dividing the rateable value for the union among the parishes, then the general principle given above was applied. (6) A deduction of one-fifth was allowed on nearly all property. (7) Working capital included 5 months' expenses less 4 months' receipts from automatic meters and 3 months' receipts from residuals. (8) No deduction was allowed for depreciation, beyond the charges for repairs and renewals, nor for payments to reserve funds.

The assessment of the Manchester gas undertaking is typical of another method which is used somewhat. There the land, buildings, holders and all other structures upon land belonging to the department are assessed at 4 per cent. of their value as shown by the books of the undertaking, and the situs of the property determines the district in which it is rated. The mains and services are assessed at a rate varying from 10 per cent. to 15 per cent. of the total receipts from the sale of gas in the district in which the pipes are located. This means a high valuation and a heavier charge per 1,000 feet of gas sold than paid by any other undertaking examined, as will be shown later. No deductions are allowed, so that the gross valuation here would be equal to 5 per cent. on land, etc., and 12½ per cent. to 19 per cent. on income for mains in other places where deductions are permitted. An appeal was pending against the assessment when the plant was visited. It was maintained that the plant should not be assessed at a higher rate than other plants, and that 10 per cent., certainly 15 per cent., was altogether too much. The Gas Committee of the Council had expressed a willingness to be satisfied with an assessment of 4 per cent. on land, buildings, etc., and 7½ per cent. on receipts for mains; but the township authorities, which have charge of the valuation of property in Manchester, are naturally very loath to make the reduction.

### Valuation of Electricity Supply Works.

Electric undertakings are assessed generally according to the same methods that rule in the valuation of gas works. The Manchester electrical undertaking, for example, is assessed precisely as the gas works, except that the rate upon land, buildings, etc., is 3½ per cent. instead of 4 per cent. of the capital outlay, and that the mains and services are assessed uniformly at 15 per cent. of the income from the sale of current. All in all, this is a heavier assessment than the gas works valuation and an appeal is now pending against the assessment for mains.

The method in Glasgow is analogous to that used in Newcastle for the assessment of gas works. The gross valuation of the whole undertaking is as follows (shillings and pence omitted):

GLASGOW ELECTRIC LIGHTING WORKS.

For the Year Ending Whitsunday, 1906.

| | | |
|---|---|---|
| **Revenue for year ending May 31, 1904:** | | |
| Sale of current per meter | £146,838 | |
| Public lighting | 11,352 | |
| | | £158,190 |
| **Working charges for year endng May 31, 1904:** | | |
| Generation of electricity | £32,375 | |
| Distribution of electricity | 8,984 | |
| Public lamps, attending and repairing | 3,112 | |
| Occupier's local rates and taxes | 5,107 | |
| Rent of telephones, offices, etc | 589 | |
| Management | 7,815 | |
| Lamps and fittings supplied during year to consumers consequent on change of voltage, and including proportion for year 1903-1904 transferred from suspense account | 2,701 | |
| Occupier's income tax.....say | 232 | |
| Depreciation of moveable plant, amount written off.. | 4,108 | |
| | | 65,023 |
| Net revenue | | £93,167 |
| **Allowances:** | | |
| Five per cent. on £30,458—half of Working Charges being estimated capital necessary to carry on the business for interest | £1,523 | |
| Five per cent. on £79,601—value of meters, accumulators, instruments and furniture, at May 31, 1904, for interest | 3,980 | |
| | | 5,503 |
| Value | | £87,664 |

Comparing the above with the Newcastle gas company's statement, it is seen in Glasgow (1) that the returns for the latest year were taken instead of the three preceding years; (2) that depreciation upon moveable plant was allowed in addition to the usual charges for maintenance and repairs; (3) that the allowance for tenant's profits was very much less, equivalent to about 5 per cent. or 6 per cent. only, where in Newcastle it was 17½ per cent.; (4) that the assessment of the whole undertaking was determined first of all; (5) that the buildings and land were valued and assessed where they were, and (6) the remainder of the gross valuation, after deducting the value of the buildings and land, was distributed among the various areas according to the mileage in each, as follows:

| | |
|---|---|
| Parish of Glasgow | £54,574 |
| " " Govan | 30,699 |
| " " Cathcart | 2,048 |
| " " Eastwood | 343 |
| | £87,664 |
| Burgh of Glasgow | £87,401 |
| " " Partick | 73 |
| County of Lanark | 190 |
| | $87,664 |

From these amounts certain deductions were subtracted to secure the rateable value. In two parishes 32 per cent. was subtracted for poor and school rating; in two others, 25 per cent. For the other rates, such as police, sanitation, roads, parks, etc., the percentage varied from nought to 45 per cent., depending upon the purpose of the rate.

### Valuation of Tramways.

The assessment of street railways is supposed to follow principles similar to those applied in the valuation of gas and electric works, and in determining the value of the undertaking as a unit, there is little difference, except between England and Scotland. The method in vogue in England and Ireland is as follows:

First get the gross receipts for the preceding year from the accounts. Then deduct working expenses, including repairs to paving and cars and depreciation upon movable property. From this sum, called net receipts, subtract 17½ per cent. usually of tenant's capital, which is the present value of the cars, horses, stocks, tools, stores, furniture and other movable property, and cash in the bank. This remainder is the gross estimated rental, from which the statutable deductions must be made, viz., the repairs and sinking fund to renew track, overhead equipment, buildings and fixed machinery, and any fixed percentages allowed. It is important to note that no allowance may be made for payments as compensation for the franchises or for the decrease in value due to the gradually approaching date of termination of the company's rights.

The net ratable value thus obtained is the amount upon which the rates are levied if the system lies wholly within one rating area. But if it does not, the value of the "indirectly productive" property in each parish is obtained by taking 4 per cent. of the value of the land and 5 per cent. of the value of the buildings, barns, power houses, offices, etc. Their total, apportioned among the parishes where the property is located, is subtracted from gross estimated rental, and the remainder is considered the value of the lines.

As to the apportionment of this sum, practice varies. Four principles have been suggested: (1) Division according to *route* mileage. This is generally considered unfair because it gives the same weight to a mile of single track in a suburban area as to a mile of double track in the heart of a city. (2) Division according to mileage of track, omitting side-tracks. This has been adopted in some cases with corrections, but is open to objections similar to those just given. (3) According to car mileage. This is more accurate and has been used. (4) Passenger mileage. The necessary data are seldom available, but theoretically it is considered fairer and more accurate than any other system. (5) Receipts and expenditures. These must usually be estimated according to one of the previous methods. Generally, therefore, the value of the lines is divided according to track or car mileage, or

estimated net profits. The method of distributing the whole value of the undertaking upon this principle has been rejected.

The Scottish system is similar, yet different. All tramways are assessed by one person, as stated above, who determines the valuation for the whole system. The land, buildings, etc., are valued locally at 5 per cent. on original cost, and the balance is allocated according to the length of line in each rating area. Deductions are allowed as follows in Glasgow: 75 per cent. off on lines for municipal rates, 36 per cent. off on lines and buildings for poor and school rates, none for country rates. The statement of the valuation for 1906-7 founded upon the accounts for 1904-5, is as follows:

VALUATION OF GLASGOW TRAMWAYS, 1906-7.

| | | |
|---|---|---|
| Gross revenue, 1904-5, exclusive of rents | | £762,922 |
| Deduct working expenses, 1904-5: | | |
| Traffic expenses | £217,873 | |
| Power expenses | 20,908 | |
| General expenses (less £35,236 disallowed) | 39,883 | |
| Repairs (less £21,990 disallowed) | 51,277 | |
| One-half permanent way and electrical equipment renewal | 44,719 | |
| Depreciation of rolling stock and other moveable plant | 33,885 | |
| Occupier's income tax | 3,010 | |
| Rental paid to Paisley Tramway Co | 915 | |
| | | 412,470 |
| Net revenue | | £350,452 |
| Deduct tenant's allowances: | | |
| Twenty-three per cent. on £319,020, being 75 per cent. of tenant's working stock and plant | £73,375 | |
| Ten per cent. for interest and deterioration on £59,501 for value of stores | 5,950 | |
| Five per cent. for interest on £5,000 for floating capital | 250 | |
| | | 79,575 |
| Valuation for 1906-7 | | £270,877 |
| Valuation for 1905-6 | | 260,964 |
| Valuation for 1904-5 | | 245,464 |
| Total | | £777,305 |
| Average for three years | | £259,102 |
| Add for new lines to be opened | | 4,125 |
| Gross valuation for 1906-7 | | £263,227 |

which is apportioned as above stated.

Comparing these figures with the accounts for the year, it appears that the assessor did not allow the following expenses to be deducted from receipts: Feu duties and teinds, owner's local rates and taxes, third party accident insurance, fire insurance on buildings and fixed machinery, repairs to ditto, half of amount spent on repairs to permanent way and electrical equipment of line, half of amount set aside for depreciation on the same or

anything for depreciation on buildings and plant. The 23 per cent. for tenant's profits consists of 12 per cent. for profits, 5 per cent. for interest and 6 per cent. for risks, etc.

The question now naturally arises whether municipalities or companies are rated the more heavily. In canvassing local sentiment, one usually finds two opinions. Upon the one hand, it is claimed that companies are more heavily burdened, and it is explained that this is true because the assessing authorities, being public officials, naturally favor a co-ordinate branch of the local government. Upon the other hand, it is said that the municipal plants are more heavily assessed because the assessors consider that a public undertaking can more easily bear the burden imposed and because the attitude of the assessors is one of independence rather than of favoritism. Whether the true explanation is the one just urged may be questioned, but it is apparent from the following table that the ratable value per unit of output is more for municipal plants than for companies. This is specially significant when it is recalled that the income tax assessments were less for municipalities than companies. Evidently there is no favoritism or exemption of the former from the local burdens which are borne by private industries.

The following table also shows that there is a very much greater difference between ratable values than between the amounts actually paid in the form of rates, for without exception the rate of local taxation is higher for each group where there are companies than where there is municipal operation. But as local conditions must determine the rate of taxation, but ought not to influence ratable value, the latter is the more exact test.

LOCAL RATES—ASSESSMENTS AND PAYMENTS.

| | *Ratable Value.* | *Average Local Rate (Approximate).* | *Rates Paid. Amount.* | *Per M. Cu. Ft. Sold (d.)* | *Rateable Value Per M. Cu. Ft. Sold (d.)* |
|---|---|---|---|---|---|
| *Gas Undertakings—* | | | | | |
| Birmingham ..... | £96,921 | 6/4 | £30,685 | 1.19 | 3.76 |
| Glasgow ..... | 146,151 | 4/4.9 | 25,502 | 1.05 | 6.03 |
| Manchester ..... | 120,000 | 7/2 | 42,927 | 2.16 | 6.02 |
| Leicester ..... | 34,292 | 7/2 | 12,335 | 1.61 | 4.49 |
| Municipalities .. | £397,364 | 5/7.31 | £111,449 | 1.44 | 5.12 |
| London—So. M... | £191,552 | 8/4.5 | £80,255 | 1.59 | 3.79 |
| Newcastle ..... | 38,308 | 6/4.9 | 12,269 | 1.02 | 3.18 |
| Sheffield ..... | 41,132 | 8/9.5 | 18,082 | 1.55 | 3.53 |
| Companies ..... | £270,992 | 8/1.96 | £110,606 | 1.49 | 3.65 |

| | Rateable Value. | Average Local Rate (Approximate). | | Per Unit Sold (Pence). | |
|---|---|---|---|---|---|
| *Electric Supply—* | | | | | |
| Manchester ..... | £46,940 | 7/3 | £17,134 | .123 | .333 |
| Liverpool ..... | 42,795 | 7/8.9 | 15,728 | .120 | .323 |
| Glasgow ..... | 63,135 | 3/10 | 12,159 | .160 | .330 |
| St. Pancras..... | 7,087 | 7/1 | 2,474 | .089 | .256 |
| Municipalities.... | £159,957 | 5/11.26 | £47,495 | .127 | .426 |
| Newcastle—Supply. | £20,500 | 4/0.6 | £4,152 | .033 | .162 |
| Newcastle—District | 3,000 | 6/7 | 988 | .046 | .139 |
| London—City .... | 25,714 | 6/9 | 9,149 | .105 | .295 |
| Westminster ..... | 30,759 | 6/10 | 10,531 | .170 | .496 |
| St. James..... | 25,410 | 6/6 | 8,258 | .254 | .780 |
| Central ..... | 7,167 | 6/10 | 2,452 | .083 | .242 |
| Companies ..... | £112,550 | 6/3.76 | £35,530 | .099 | .313 |
| | | | | *Per Car Mile (Pence).* | |
| *Tramways—* | | | | | |
| Glasgow ..... | £245,464 | 3/2 | £38,782 | .513 | 3.283 |
| Manchester ..... | 71,632 | 7/3 | 25,912 | .440 | 1.217 |
| Liverpool ..... | 48,011 | 7/8.9 | 17,427 | .347 | .955 |
| London C. C..... | 54,370 | 7/7 | 20,525 | .350[1] | .927[1] |
| Municipalities .. | £419,477 | 4/10.73 | £102,646 | .423 | 1.729 |
| London—United Est. | £20,000 | 7/4 | £7,505 | .246 | .656 |
| Dublin .....Est. | 28,500 | 8/9 | 12,401 | .400 | .919 |
| Norwich ..... | 2,130 | 9/10 | 1,047 | .232 | .472 |
| Companies ..... | £50,630 | 8/3.32 | £20,953 | .317 | .767 |

## LOCAL FEES AND LICENSES.

Besides the local rates, there are usually certain licenses and fees to be paid. For example: The Glasgow electricity department pays (£72 in 1905-6) the assessor for preparing the valuation roll; the Sheffield gas company, the gas tester's fees; all gas undertakings, a fee (£3 per works) for making sulphate of ammonia. But the most important financially are the street car licenses.

Under the Tramways Act of 1870, local authorities may license motormen, conductors, drivers and all other persons having charge of tramcars and also the cars themselves, the license fixing the number of persons that may be carried, etc. Where the local authority operates its own tramways, the licensing body becomes the police authority, whether it is a separate body or a committee of the council. The regulations in such cases must be obeyed and the license fees paid just as if the lines belonged to a private company. For example, the London County Council tramways are regulated and licensed by the Metropolitan Police Commissioners. It is the almost invariable custom to attach a small fee

[1] Computed on the basis of the total mileage, including both electric and horse systems.

to the license and to issue licenses for one year only, so that the charge becomes an annual payment. In the case of municipal tramways, the undertaking pays the fees just the same as any other licensee, even though it may be merely a payment from one committee to another. In London it is £2 15s. per car.

The amount and kind of these fees and licenses vary from place to place, as considerable discretion is left to the local authorities. There is doubtless considerable inequality as between plant and plant, but the total payments are not large and the difference therefore could not be relatively great in any case. In theory they are supposed to cover the cost of inspection and regulation.

## SPECIAL ASSESSMENTS.

Not infrequently local improvements are paid for by an application of the "betterment" principle, viz., by assessing the cost upon the adjacent property in proportion to the amount of benefit conferred by the improvement. The undertakings considered in this report usually own little land, and it is seldom so situated as to become assessable. But if it does, neither the law nor the practice recognizes, any difference between company and municipal land. Each is assessed equally with the adjoining property.

# LABOR AND POLITICS

## British Gas, Electric Supply and Tramways

## (Answers to Questions in Schedule II)

By JOHN R. COMMONS and J. W. SULLIVAN

### E—Organization.

E 1. What is the supreme governing body of the service, whether city council, board, commission, board of directors, etc.?
E 2. Number of members.
E 3. Method of selection of members, including nominations and election.
E 4. Do political considerations influence selection?
E 5. Is the board bi-partisan or non-partisan?
E 6. Term.
E 7. Do all retire at the same time?
E 8. State salaries or allowances for services in connection with the service?
E 11. May they also conduct private business?
E 12. What has been the custom?
E 13. How often does governing body meet?
E 14. Have they a technical knowledge of the service?
E 15. What is the scope of the authority vested in this body?
E 16. Is it fully exercised in practice?
E 17. If there is any intermediate person or body between the supreme governing body as above described and the chief executive officer, give its constitution, organization, functions, etc.
E 21. Is the chief executive officer an engineer by profession?
E 22. Does the supreme governing body actually determine the administration of the service or does it simply ratify the suggestions of the executive officer?
E 23. How is the chief executive officer (or officers, if more than one of equal rank) selected?
E 24. How is he removed or discharged?
E 25. Do political considerations influence appointment or removal?
E 26. What is his term of office?
E 27. Has he changed with each change in the city administration?

E 38. What is the system of promotion?
E 39. What considerations determine
(*a*) Selection?
(*b*) Dismissal?
E 42. Are residents of the town given the preference?
E 43. Are positions distributed among the needy?

**F—Political Conditions.**

F 1. What are the conditions of municipal suffrage?
F 5. Have the votes of employees affected city elections? Cite instances.
F 6. Have they used political power to secure higher wages, fewer hours, etc. Cite instances.
F 8. Are employees active in party work?
F 9. Are they expected or required to pay political assessments?
F 10. What evidence is there of the influence of private companies upon the nomination and election of members of the franchise granting and franchise controlling authorities?
F 11. To whom has free service been given?
F 12. Has the privilege of free service been considered an inherent right in connection with holding office, and has it been granted voluntarily immediately upon taking office, or has it been made the subject of special request on the part of the office holder?
F 13. After the person enjoying the free service has left the office through the holding of which he has been granted free service, has the privilege still been continued?
F 14. Who has had the authority to grant free service?
F 15. What have been the rules in regard to free service?
F 16. Have they rigidly been adhered to?
F 17. What was the number of people enjoying free service last year?
F 18. Is the number increasing or decreasing?
F 19. What was the total amount of free service last year?
F 20. Has any attempt been made to make confidential any of the features relating to free service, or has it generally been understood?
F 21. Is there any tendency to abuse the privilege of free service?
F 22. Has anything been done in case the privilege of free service has been found to be abused?

**G—Labor.**

G 14. In case of accident to employees, who paid medical expenses?
G 15. Who paid for badges and uniforms?
G 19. Were prizes offered for faithful service?
G 20. Describe system of profit sharing, if any.
G 21. Describe pension system for old age or infirm employees.
G 30. How were wages fixed and by whom?
G 31. Were union rates observed?
G 32. If there were trade agreements, state them.

G 33. Was there any form of collective bargaining?
G 34. Has there ever been any concerted action among employees to have wages raised or hours shortened? Describe.
G 35. Were the employees organized in unions?
G 36. Was the "closed shop" or "open shop" policy in force?
G 37. Was the municipality or company opposed to organized labor?
G 38. Has there ever been a strike on the system? If so, describe fully.
G 39. How were labor disputes settled?
G 40. Were the laws relating to health, employer's liability, and contract labor observed?
G 41. Were there any printed or written instructions to employees? If so, enclose copies.
G 42. How were employees treated by management?
G 43. Did employees have a share in the management of the system?
G 49. If so, were his expenses paid by himself?
G 50. Number of persons killed during past year:
(*a*) Employees.
(*b*) Others.
G 51. Number of persons injured:
(*a*) Employees.
(*b*) Others.
G 52. What was the amount of damages usually paid for death?
G 53. Were payments for injuries usually adequate?
G 54. Were cases usually settled without lawsuit?
G 55. May the municipality or company compromise or settle claims without lawsuits?

## GAS UNDERTAKINGS.

### E—Organization.

E 9. May councillors also hold other public office?
Yes, in all cases.
E 10. Do they always, generally, exceptionally, or never?
Glasgow, not uncommon; Newcastle, generally; others not answered.
E 18. What is the official title of the chief executive officer (or officers, if more than one of equal rank)?
*Glasgow.* Chief Engineer and General Manager (combined).
*Manchester.* Gas Superintendent.
*Birmingham.* Secretary to Gas Committee.
*Leicester.* Engineer Manager (combined).
*Newcastle.* The Secretary.
*Sheffield.* General Manager and Secretary (combined).
*South Metropolitan.* Chairman.
E 19. Is the head of the engineering service subordinate to the chief executive officer, co-ordinate with him or united in one man?
*Glasgow.* One man.
*Manchester.* Subordinate.

*Birmingham.* Co-ordinate.

*Leicester.* One man.

*Newcastle.* Responsible to directors. Instructions through Secretary.

*Sheffield.* No answer.

*South Metropolitan.* Subordinate.

E 20. Is the head of the engineering service an engineer by profession?

*Glasgow.* Yes.

*Manchester.* Yes.

*Birmingham.* Yes.

*Leicester.* Yes.

*Newcastle.* Yes.

*Sheffield.* Yes.

*South Metropolitan.* Yes.

E 28. How long has the present chief executive officer served?

*Glasgow.* Since 1891 as Works Manager. Since 1903 as Chief Engineer.

*Birmingham.* Five years.

*Leicester.* Twenty-four years.

*Newcastle.* Thirty-nine years with company. Eleven years as secretary.

*Sheffield.* Twenty-three and a half years.

*Manchester and South Metropolitan.* No answer.

E 29. Does he devote all of his time to the business?

Yes, in all cases.

E 30. What was his annual salary or pay for last fiscal year?

*Glasgow.* £1,000.

*Birmingham.* £1,200, Chief Engineer £1,600, Chief Chemist, £350.

*Leicester.* £1,500.

*Newcastle.* £1,250 and income tax paid by company.

*Manchester, Sheffield and South Metropolitan.* No answer.

E 31. Give titles and annual salaries of the ten highest paid subordinates of the chief executive officer for the last fiscal year.

*Glasgow:*

| | | | |
|---|---|---|---|
| Treasurer ..... | £650 | Asst. Genl. Mgr..... | £300 |
| Manager at Works..... | 540 | Chief Draughtsman.... | 360 |
| " " " ..... | 400 | Surveyor ..... | 300 |
| " " " ..... | 350 | Supt. of Workshops.... | 250 |
| " " " ..... | 350 | " " Street Mains. | 208 |

*Manchester.* No data.

*Birmingham:*

Secretary £1,200 and Engineer £1,600 are co-ordinates.

| | | | |
|---|---|---|---|
| Chief Chemist..... | £350 | Works Engineer..... | £575 |
| Chief Cashier..... | 500 | Do. ..... | 500 |
| Accountant ..... | 350 | Do. ..... | 450 |
| Office Supt..... | 300 | Do. ..... | 325 |
| Assistant Secy..... | 300 | Do. ..... | 275 |
| | | Fittings Supt..... | 450 |

*Leicester:*

| | | | |
|---|---|---|---|
| Accountant ..... | £350 | Assistant at Works.... | £300 |
| Chief Clerk and Cash.. | 300 | Supt. Office at Works.. | 300 |
| Chief Rental Clerk..... | 225 | Supt. of Street Mains.. | 200 |
| Chief Collector..... | 225 | Supt. of Stove Dept.... | 190 |
| Chief Meter Inspect... | 225 | Assistant Collector..... | 150 |

*Newcastle:*

| | | | |
|---|---|---|---|
| Engr. and Mgr. Elswick Works ..... | £1,000 | Cashier ..... | £300 |
| | | Registrar ..... | 275 |
| Do. Redheugh..... | 500 | Sub-Mgr. Elswick Works | 325 |
| Distribution Supt..... | 400 | Supt. Rental Dept..... | 250 |
| Accountant ..... | 325 | Chief of Development Dept..... | 250 |
| Chief of Stores and Residuals Dept..... | 300 | | |

*Sheffield.* Salaries are known only to the company head and the party receiving the same. Hence no data.

*South Metropolitan.* No data.

E 32. Give the number of all salaried offices during last fiscal year.

*Leicester.* 106.

*Newcastle.* 132.

*Sheffield.* 145.

*Glasgow, Manchester, Birmingham and South Metropolitan.* No answer.

E 33. How are the subordinate officials and employees selected?

*Glasgow.* By officer in charge of the several branches of undertaking.

*Birmingham.* In adm. by Secretary. In engr. by Engineer, Chief. In Chemistry, by Chief Chemist. Confirmed by Committee. Most important positions after interviews by committee first.

*Leicester.* Committee on recommendation of Engr.

*Newcastle.* Officials sometimes after advertising, usually by promotion. Workmen from applicants of whom there are usually a large number on the list.

*Sheffield.* General Manager.

*Manchester and South Metropolitan.* No answer.

E 34. How and by whom are they discharged?

*Glasgow.* By chief officers in charge of branches.

*Birmingham.* Staff appointments by committee. Others by Secretary, Engineer, and Chief Chemist.

*Leicester.* By committee on report of Engineer.

*Newcastle.* For misconduct, officials by board of directors, or Head of Dept., 1 month's notice. Workmen head of Dept. 1 week's notice.

*Sheffield.* General Manager.

*South Metropolitan.* By the Board. Suspended by chief executive officer.

E 35. What positions are filled for definite terms?

Indefinite in all except engineer, Newcastle.

E 36. Who decides when and how many men are to be employed?
*Glasgow.* Chief officers acting under General Manager.
*Birmingham.* Engineer in charge of various works.
*Leicester.* Engineer Manager.
*Newcastle.* Department Heads.
*Sheffield.* Superintendents of Works.
*Manchester and South Metropolitan.* No answer.

E 37. What is the usual length of service?
*Glasgow.* Varies.
*Birmingham.* As long as work continues. Some from 10-40 years.
*Leicester.* Av. 25 years, several over 40 years.
*Newcastle.* Instances of 50 years service, seldom discharged for old age. Given light work.
*Sheffield.* During good behavior.

E 40. Is employment restricted to citizens?
*Glasgow.* As far as practicable.
*Birmingham, Leicester, Newcastle.* No.
*Manchester, Sheffield and South Metropolitan.* No answer.

E 41. Are there any age restrictions?
*Glasgow.* No.
*Manchester.* No answer.
*Birmingham.* Only in more important positions when it is desirable to get men under 40 years of age.
*Leicester.* No.
*Newcastle.* No.
*Sheffield.* None but usually young men.
*South Metropolitan.* No answer.

E 43. Are positions distributed among the needy?
*Glasgow.* Not unless man is otherwise qualified.
*Birmingham.* Occasionally in hard times in unskilled work.
*Leicester, Newcastle.* No.

**F—Political Conditions.**

F 2. Give the number of votes cast at the last city election and date of election.
*Glasgow.* November, 1905. Eleven wards, 66,400 electors, 45,790 votes.
*Leicester.* Bye-election 17,550, March 6, 1906.

F 3. How many of the employees are voters?
*Glasgow.* Probably all.
*Leicester.* All except youths. Others not answered.

F 4. If any employees hold city office, state how many and what positions.
*Glasgow.* Municipal employees forbidden by law to hold any city office.
*Birmingham.* Cannot hold office.

F 7. Have candidates for office promised higher wages, better hours, etc., for employees? Cite cases.
*Glasgow.* In several instances.
*Birmingham.* Yes, but unable to carry them out.

*Leicester.* Made, but not taken too seriously.
Others, no answer.

G—Labor.

G 1. The following data are for the year ending:
*Glasgow.* May 31, 1905.
*Manchester.* March 7, 1902.
*Birmingham.* March 31, 1906.
*Leicester.* March 31, 1905.
*Newcastle.* December 31, 1905.
*Sheffield.* December 31, 1905.
*South Metropolitan.* January 1, 1906.

G 2, 4, 5.

TOTAL NUMBER OF ALL EMPLOYEES FOR THE LAST FISCAL YEAR OF THE RESPECTIVE PLANTS.

| | *Glasgow.* | *Manchester.* | *Birmingham.* | *Leicester.* | *Newcastle.* | *Sheffield.* | *South Metropolitan.* |
|---|---|---|---|---|---|---|---|
| July, 1904..... | 2,648 | .... | .... | .... | .... | .... | .... |
| August, 1904.... | 2,641 | .... | .... | .... | .... | .... | .... |
| September, 1904. | 2,635 | .... | .... | .... | .... | .... | .... |
| October, 1904... | 2,691 | .... | .... | .... | .... | .... | .... |
| November, 1904. | 3,073 | .... | .... | .... | .... | .... | .... |
| December, 1904. | 3,138 | .... | .... | .... | .... | .... | .... |
| January, 1905... | 3,532 | .... | .... | 1,316 | 1,845 | 1,356 | 6,301 |
| February, 1905. | 3,440 | .... | .... | 1,272 | 1,805 | 1,384 | 6,158 |
| March, 1905.... | 3,214 | .... | .... | 1,056 | 1,645 | 1,259 | 5,653 |
| April, 1905..... | 2,961 | 1,966 | .... | 1,023 | 1,631 | 1,210 | 5,608 |
| May, 1905..... | 2,706 | 1,937 | .... | 1,142 | 1,772 | 1,342 | 5,924 |
| June, 1905..... | 2,662 | 1,922 | .... | 1,046 | 1,609 | 1,193 | 5,437 |
| July, 1905..... | .... | 1,934 | 2,228 | 1,055 | 1,619 | 1,167 | 5,476 |
| August, 1905... | .... | 1,941 | 2,239 | 1,082 | 1,661 | 1,119 | 5,534 |
| September, 1905. | .... | 1,982 | 2,256 | 1,113 | 1,720 | 1,105 | 5,675 |
| October, 1905... | .... | 2,044 | 2,344 | 1,142 | 1,721 | 2,344 | 5,888 |
| November, 1905. | .... | 2,233 | 2,508 | 1,220 | 1,821 | 2,508 | 6,108 |
| December, 1905. | .... | 2,241 | 2,613 | 1,246 | 1,917 | 2,613 | 6,380 |
| January, 1906... | .... | 2,203 | 2,547 | .... | .... | .... | .... |
| February, 1906.. | .... | 2,084 | 2,581 | .... | .... | .... | .... |
| March, 1906.... | .... | 1,994 | 2,478 | .... | .... | .... | .... |
| April, 1906..... | .... | .... | 2,342 | .... | .... | .... | .... |
| May, 1906..... | .... | .... | 2,223 | .... | .... | .... | .... |
| June, 1906..... | .... | .... | 2,193 | .... | .... | .... | .... |
| Average (all)... | 2,945 | 2,026 | 2,389 | 1,142 | 1,730 | 1,250 | 5,845 |
| Average (workmen)..... | 2,900 | .... | .... | 1,037 | 1,650 | 1,105 | 5,584 |

G 9. How was overtime paid for?
*Glasgow.* Tradesmen 1½. Laborers 1¼.
*Manchester.* 1¼ and 1½.
*Birmingham.* 1½, 6 A. M.-10 P. M. Sun. 1¼, 5 P. M.-6 A. M. M. T. W. T. F. 1¼, 1 P. M.-6 A. M. S. and S.
*Leicester.* Overtime avoided.
*Newcastle.* 1½.
*Sheffield.* 1½ Sundays, 1¼ week days, Sun. 1½.
*South Metropolitan.* 1¼ work days, workmen. 1½ Sundays.

G 10. State what vacation, including holidays, with pay was allowed to wage workers.

*Glasgow.* Retort house men and unskilled laborers 5 days.

*Manchester.* Workmen 4 days.

*Birmingham.* Retort house men 1 week a year. Yard men three bank holidays a year.

*Leicester.* A week and double pay for Christmas and Whitsunday.

*Newcastle.* Retort house men one week. Double pay Christmas and Good Friday. Workshop one day for annual excursion.

*Sheffield.* All foremen 10 days. Others none.

*South Metropolitan.* First two annual holidays, one week with pay. Third and future holidays one week with double pay. Good Friday and Christmas.

G 11. State what vacation with pay was allowed to salaried employees.

*Glasgow.* Three weeks for indoor, and two weeks for outdoor.

*Manchester.* No answer.

*Birmingham.* 2-4 weeks according to position.

*Leicester.* Two weeks.

*Newcastle.* Two weeks.

*Sheffield.* Two weeks.

*South Metropolitan.* Three weeks.

G 12. State what allowance was made to wage workers for sick leave.

*Glasgow.* None.

*Manchester.* No answer.

*Birmingham.* None unless injured at works in course of employment.

*Leicester.* None except for accident.

*Newcastle.* None.

*Sheffield.* None.

*South Metropolitan.* See Sick Fund Rules.

G 13. State what allowance was made to salaried employees for sick leave.

*Glasgow.* Salary if absence is for reasonable time only.

*Manchester.* No answer.

*Birmingham.* Full pay first month, half pay second month. Each case actually on its merits.

*Leicester.* Except in protracted cases, full pay while sick.

*Newcastle.* Full salary.

*Sheffield.* Salary is paid during absence.

*South Metropolitan.* No answer.

G 16. Were employees required to give surety bonds?

*Glasgow.* Those handling cash were.

*Manchester.* No answer.

*Birmingham.* When necessary.

*Leicester.* Those handling cash.

*Newcastle.* Those handling money.

*Sheffield.* Such as handle money.

*South Metropolitan.* No answer.

G 17. Who paid the premiums?

*Glasgow.* City.

*Manchester.* No answer.

*Birmingham.* The Department.

*Leicester.* Department.

*Newcastle.* Company.

*Sheffield.* The Company.

*South Metropolitan.* No answer.

G 18. What provision was made for technical instruction?

*Glasgow.* None.

*Birmingham.* Pay fees for all who attend. Youths required to go to one class.

*Leicester.* None.

*Newcastle.* Fees paid for young salaried employees attending colleges on condition good attendance.

*Manchester, Sheffield, South Metropolitan.* No answer.

G 21. Describe pension system for old age or infirm employees.

*Glasgow.* No system, voluntary donations only in deserving cases.

*Manchester.* No answer.

*Birmingham.* Complete system see text.

*Leicester.* No definite system, but receive something.

*Newcastle.* Few small allowances to old workmen by board. No system.

*Sheffield.* Directors pension old, infirm workmen. Superannuation fund for officials who pay 2½ per cent. salaries. Company pays same amount. Fund invested with the Company. (Copy of scheme furnished.)

*South Metropolitan.* No answer.

G 22. Did local benefit associations exist among employees?

*Glasgow.* Yes. Friendly Societies.

*Manchester.* No answer.

*Birmingham.* Sick and Funeral Allowance Society.

*Leicester.* Sick Fund (Annual Statement).

*Newcastle.* Yes.

*Sheffield.* Friendly Societies, *i. e.,* Odd Fellows, etc.

*South Metropolitan.* Several such associations.

G 23. If there were, did municipality or company contribute to the funds?

*Glasgow.* No.

*Manchester.* No answer.

*Birmingham.* Department guarantees sufficiency of fund.

*Leicester.* £50 per year.

*Newcastle.* No.

*Sheffield.* No.

*South Metropolitan.* No answer.

G 24. What other methods were used by the municipality or company to improve the social welfare, such as club houses, libraries, gymnasiums, excursions, toilet facilities, etc.?

*Glasgow.* Bath rooms and lavatories. Good, but not well located, hence not much used.

*Manchester.* No answer.

*Birmingham.* Mess and bath rooms and club house.

*Leicester.* Cottages, clubs, lavatories, etc., well taken care of.

*Newcastle.* Contribution to excursion and rifle range.

*Sheffield.* Lavatories, mess rooms, etc., for stokers. In poor condition.

*South Metropolitan.* Great variety of welfare arrangements. Abundant provision.

G 25. Did employees get free service or gratuities of any sort? If so, what?

*Glasgow.* None.

*Manchester.* No answer.

*Birmingham.* None.

*Leicester.* None.

*Newcastle.* Coke half price. Gas 40 per cent. discount, to officials who are householders. Workmen: Coke 50 per cent. Gas 10 per cent. discount.

*Sheffield.* No.

*South Metropolitan.* Gas at cost.

G 26. How frequently were different classes of employees paid?

Workmen weekly, officials monthly in all cases.

G 27. Was payment made promptly and regularly?

Yes, all.

G 28. Were they paid by cash, check or due bill?

Cash.

G 29. When and where were payments made?

Where employed, in all cases.

G 44. Were bicycles used in the business by employees? If so, how many and for what purpose?

*Glasgow.* No.

*Manchester.* No answer.

*Birmingham.* 6 for gas fitters. 8 for inspectors.

*Leicester.* Some at offices.

*Newcastle.* Six.

*Sheffield.* One for superintendent of mains.

*South Metropolitan.* No answer.

G 47. Were any technical journals subscribed for?

Yes, in all cases.

G 48. Did the superintendent or engineer attend technical meetings?

Yes, in all cases.

G 49. If so, were his expenses paid by himself?

*Glasgow.* By department.

*Manchester.* No answer.

*Birmingham.* By themselves.

*Leicester.* By himself.

*Newcastle.* Partly by company, partly by himself.

*Sheffield.* By themselves.
*South Metropolitan.* No answer.

G 50. Number of persons killed.
*Glasgow.* 2.
*Birmingham.* 1.
Others none.

G 51. Number of employees injured.
*Glasgow.* 77.
*Manchester.* 26.
*Birmingham.* 118.
*Leicester.* 11.
*Newcastle.* 67.
*Sheffield.* 18.
*South Metropolitan.* 243.

## ELECTRIC LIGHTING.

### E—Organization.

E 9. May councillors also hold other public office?
Yes, in all cases.

E 10. Do they always, generally, exceptionally, or never?
Generally.

E 18. What is the official title of the chief executive officer (or officers, if more than one of equal rank)?
*Glasgow.* Chief Engineer and Manager.
*Manchester.* Chief Electrical Engineer; Commercial, Secretary.
*Liverpool.* Resident Electrical Engineer.
*St. Pancras.* Chief Electrical Engineer.
*Newcastle—Supply.* No answer.
*Newcastle—District.* Chief Engineer, Commercial Manager, and Secretary.
*City of London Lighting Co.* Managing Director and Engineer.

E 19. Is the head of the engineering service subordinate to the chief executive officer, co-ordinate with him or united in one man?
*Glasgow.* One man.
*Manchester.* Co-ordinate with the Secretary.
*Liverpool.* See 18.
*St. Pancras.* Resident and Supervising Engineer subordinate to the Chief Electrical Engineer.
*Newcastle—Supply.* No answer.
*Newcastle—District.* Subordinate to the Managing Director.
*City of London Lighting Co.* Both responsible to Board for their respective departments.

E 20. Is the head of the engineering service an engineer by profession?
Yes, in all cases.

E 28. How long has the present incumbent served?
*Glasgow.* 14 years. 13 as subordinate official, 1 as Chief Engineer.

*Manchester.* 2 years.

*St. Pancras.* Since August, 1895.

*Newcastle—District.* Engineer been with company since organization January, 1889.

*City of London Lighting Co.* Chief Engineer since 1896. Manager Secretary since 1891.

E 29. Does he devote all of his time to the business?

Yes, in all cases.

E 30. What was his annual salary or pay for the last fiscal year?

*Glasgow.* First year £800; second year £900; third year £1,000.

*Manchester.* £900.

*Liverpool.* £900 per annum.

*St. Pancras.* £1,000.

*Newcastle—Supply.* No answer.

*Newcastle—District.* Not published.

*City of London Lighting Co.* Chief Engineer £1,500, M. Sec. £1,000.

E 31. Give titles and annual salaries of the ten highest paid subordinates of the chief executive officer for the last fiscal year.

*Glasgow.* £182 to £500.

*Manchester.* £200 to £400.

*Liverpool.* £200 to £550.

*St. Pancras.* £110 to £450 (latter also residence coal and light).

*Newcastle—Supply.* No answer.

*Newcastle District.* Amount of salaries not published.

*City of London Lighting Co.* £200 to £650.

E 32. Give number of all salaried offices during last fiscal year.

*Glasgow.* Approximately 20.

*Manchester.* 36.

*Liverpool.* 62.

*St. Pancras.* 18.

*Newcastle—Supply.* No answer.

*Newcastle—District.* Eight officials, six clerks.

*City of London Lighting Co.* No answer.

E 33. How are the subordinate officials and employees selected?

*Glasgow.* Principal Assistants to Chief Engineer selected by the Committee. All other assistants selected by Chief Engineer or his subordinates by personal interview, etc.

*Manchester.* Picked as appointed by Executive officer from filed list.

*Liverpool.* Salaried officers appointed by the Committee.

*St. Pancras.* Estab. officers appointed by Committee. Weekly employees by Chief Officer.

*Newcastle—Supply.* No answer.

*Newcastle—District.* Clerks appointed by Secretary. Officers elected by the board.

*City of London Lighting Co.* Monthly Staff by chief officials subject to confirmation by the board. Weekly entirely by two chief officials.

E 34. How and by whom are they discharged?

*Glasgow.* Principal officials discharged by Committee. Minor officials and employees can be by head of their department.

*Manchester.* The Executive Officers.

*Liverpool.* By the Committee.

*St. Pancras.* By the Chief Officer. If discharged employee appealed to the Committee, his complaint would be attended to.

*Newcastle—Supply.* No answer.

*Newcastle—District.* By authority that appointed them.

*City of London Lighting Co.* Monthly by Board usually on recommendation of chief officials. Weekly by two chief officials.

E 35. What positions are filled for definite terms?

*Glasgow.* Engineer. Chief Engineer Assistant.

*Manchester.* Only Chief Engineer has agreement as to term of years.

*Liverpool.* No answer.

*St. Pancras.* Establishment officers subject to three months' notice for the two principal offices and one month for others.

*Newcastle—Supply.* Agreement for stated number of years.

*Newcastle—District.* Manager Director and Secretary are appointed for a term of years.

*City of London Lighting Co.* None.

E 36. Who decides when and how many men are to be employed?

*Manchester.* The Executive Officer.

*Liverpool.* Resident Electrical Engineer.

*St. Pancras.* The council usually acting on advice of Committee.

*Newcastle—Supply.* No answer.

*Newcastle—District.* Engineer.

*City of London Lighting Co.* Chief official.

E 40. Is employment restricted to citizens?

No, in all cases.

E 43. Are positions distributed among the needy?

*Manchester.* For special and temporary work when extra hands required, these drawn partly from unemployed.

Others, no.

F—Political Conditions.

F 2. Give the number of votes cast at the last city election and date of election.

*Manchester.* 45,700.

*Liverpool.* 47,390 out of 86,125; average 55 per cent. per ward.

*St. Pancras.* In 1903, 17,460 out of 33,376 electors—viz.: 52.3 per cent.

F 3. How many of the employees are voters?

*Glasgow.* Impossible to answer correctly. In department about 700 employees, about 1/3 of whom supposed to be on the roll.

*Manchester.* Probably 70 to 80 per cent.

F 7. Have candidates for office promised higher wages, better hours, etc., for employees? Cite cases.

*Manchester.* Very probably.

G—Labor.

G 1. The following data are for the year ending:

*Glasgow.* 1905.

*Manchester.* December 31, 1905.

*Liverpool.* December, 1905.

*St. Pancras.* No answer.

*Newcastle—Supply.* December 1, 1905.

*Newcastle—District.* December 31, 1905.

*City of London Lighting Co.* December, 1905.

G 4. What was the average number of officers for the year?

*Glasgow.* 700.

*Manchester.* 770.

*Liverpool.* No answer.

*St. Pancras.* 200.

*Newcastle—Supply.* No answer.

*Newcastle—District.* 110.

*City of London Lighting Co.* Commercial clerks, canvassers, women clerks about 45.

G 5. What was the average number of wage workers for the year?

*Glasgow.* 600.

*Manchester.* 770.

*Liverpool.* No answer.

*St. Pancras.* 180.

*Newcastle—Supply.* No answer.

*Newcastle—District.* 98.

*City of London Lighting Co.* 514.

G 9. How was overtime paid for?

*Glasgow.* 1½ for overtime, double time for Sunday, men paid a weekly wage not paid for overtime if worked, but for holidays.

*Manchester.* 1¼ and 1½ time week days. Double time Sun.

*Liverpool.* No answer.

*St. Pancras.* By the hour.

*Newcastle—Supply.* No overtime for upstanding wages. Men by the hour are paid 1¼ time for first 2 hours and then 1½ for overtime.

*Newcastle—District.* Weekdays ordinary rate. Sundays 1½ time for engineers and firemen. Double time for fitters and others.

*City of London Lighting Co.* By allowance in time varying from base time to double time.

G 10. State what vacation, including holidays, with pay was allowed to wage workers.

*Glasgow.* Men paid by the hour do not get paid for holidays. Paid for any overtime they work.

*Manchester.* Engine room staff generally—one week; laborers, none.

*Liverpool.* One week holiday allowed with pay after 12 months' service.

*St. Pancras.* All men employed 12 months and over 7 days. Staff 14 days.

*Newcastle—Supply.* 10 days station men. 14 days others.

*Newcastle—District.* Fitters and Power Station Employees—2 weeks. Foreman and Meter Inspectors—2 weeks. Outside men 1 week.

*City of London Lighting Co.* Those on fixed weekly wage are allowed 1 week and national holidays. Those paid by day or hour get from 1-7 days.

G 11. State what vacation with pay was allowed to salaried employees.

*Glasgow.* From 5-21 days per annum.

*Manchester.* 10 and 14 days in summer and usual recognized holidays.

*Liverpool.* Under 10 years' service 2 wees. Over 10 years' service 3 weeks.

*St. Pancras.* 14 days.

*Newcastle—Supply.* Officials 21 days. Other salaried employees 14 days.

*Newcastle—District.* 2 weeks.

*City of London Lighting Co.* Generally 2 weeks in addition to national holidays. Superintendent and heads of four departments 3 weeks.

G 12. State what allowance was made to wage workers for sick leave.

*Glasgow.* If hourly paid none. If weekly, half pay.

*Manchester.* None except in case of accident when half pay is usually granted.

*Liverpool.* None.

*St. Pancras.* No sick leave allowance except for staff hands.

*Newcastle—Supply.* One week's wages and then no more until they return.

*Newcastle—District.* Foremen, Fitters and Meter Inspectors, upstanding wage.

*City of London Lighting Co.* Weekly servants get full pay for maximum of three months subject to discretion of company and doctor's certificate.

G 13. State what allowance was made to salaried employees for sick leave?

*Glasgow.* Full pay for a month.

*Manchester.* Full salary for a certain period.

*Liverpool.* No deduction made from salary for ordinary sick leave.

*St. Pancras.* Full pay and half according to directions of Committee.

*Newcastle—Supply.* First 6 weeks full pay. Second 6 weeks half pay. No more till return.

*Newcastle—District.* Full wages.

*City of London Lighting Co.* Full pay at discretion of company for three months.

G 15. Who paid for badges and uniforms?

*Glasgow.* Department.

*Manchester.* Corporation.

*Liverpool.* Meter readers' uniforms and enginemen's and firemen's overalls supplied by Corporation.

*St. Pancras.* None used.

*Newcastle—Supply.* Company.

*Newcastle—District.* ——

*City of London Lighting Co.* Where necessary the company supplies.

G 16. Were employees required to give surety bonds?

*Glasgow.* No.

*Manchester,.* No.

*Liverpool.* ——

*St. Pancras.* Yes, in case of Chief Clerk.

*Newcastle—Supply.* (Collectors.) We are guaranteed with insurance company against loss.

*Newcastle—District.* ——

*City of London Lighting Co.* Not directly, but company insure in a guarantee company in all cases where control or handling of money is concerned and pay the premium.

G 17. Who paid the premiums?

*Glasgow.* None.

*Manchester.* ——

*Liverpool.* ——

*St. Pancras.* The Council.

*Newcastle—Supply.* Company.

*Newcastle—District.* ——

*City of London Lighting Co.* ——

G 18. What provision was made for technical instruction?

*Glasgow.* None, but facilities are granted to allow young engineers to attend regularly evening classes at Technical College.

*Manchester.* ——

*Liverpool.* ——

*St. Pancras.* None.

*Newcastle—Supply.* None.

*Newcastle—District.* Donations to colleges.

*City of London Lighting Co.* Each department train their own men.

G 19. Were prizes offered for faithful service?

None.

G 21. Describe pension system for old age or infirm employees.

*Glasgow.* None. Friendly Society worked by a committee of employees.

*Manchester.* Thrift fund under which a certain per cent. is deducted from salary or wages.

*Liverpool.* None.

*St. Pancras.* None.

*Newcastle—Supply.* Old employees kept on as far as possible and given light work.

*Newcastle—District.* None.

*City of London Lighting Co.* Superannuation fund for salaried employees for this purpose.

G 22. Did local benefit associations exist among employees?

*Glasgow.* Yes.

*Manchester.* Provident and Sick Fund for officials.

*Liverpool.* Employees have formed Mutual Aid Society to assist members when off sick.

*St. Pancras.* Yes.

*Newcastle—Supply.* Sick Fund. They subscribe 6d. per week and in case of illness are allowed a figure in proportion to their wages.

*Newcastle District.* Yes. Sick Benefit.

*City of London Lighting Co.* Company interest themselves and direct a Sick Club supported and controlled by wage earners and make an allowance to sick members of one-half the allowance made by the Club.

G 23. If there were, did municipality or company contribute to the funds?

*Glasgow.* No.

*Manchester.* Yes.

*Liverpool.* No.

*St. Pancras.* No.

*Newcastle—Supply.* Yes. Guarantee £20.

*Newcastle—District.* Yes. Company contributed.

*City of London Lighting Co.* ——

G 24. What other methods were used by the municipality or company to improve the social welfare, such as club houses, libraries, gymnasiums, excursions, toilet facilities, etc.?

*Glasgow.* Department has Rambling Club, Reading Club, Harriers Club, Photographic Club, bath rooms and a few journals for the staff.

*Manchester.* Athletic Club, but no Social Clubs or Club Houses so far.

*Liverpool.* Employees formed Athletic, Social and Thrift Society and the Corporation allow them the use of land and Club room without charge.

*St. Pancras.* Baths, etc. Officers of Council have their own Swimming and Cricket Clubs.

*Newcastle—Supply.* None.

*Newcastle—District.* Bath room and lavatory at Works.

*City of London Lighting Co.* Annual excursion to which Company contribute and also give full day's pay.

G 25. Did employees get free service or gratuities of any sort? If so, what?

*Glasgow.* None.

*Manchester.* No.

*Liverpool.* ——

*St. Pancras.* No.

*Newcastle—Supply.* Salaried officers allowed current acct. instead of 3¾ per unit less 5 per cent. the usual rate.

*Newcastle—District.* ——

*City of London Lighting Co.* No free service or perquisites, but gratuities are granted for special work done.

G 26. How frequently were different classes of employees paid?

*Glasgow.* Once per week.

*Manchester.* Weekly generally. Certain officials monthly.

*Liverpool.* ——

*St. Pancras.* Weekly.

*Newcastle—Supply.* Officials monthly. All others weekly.

*Newcastle—District.* Street laborers daily. Workmen weekly. Officials monthly.

*City of London Lighting Co.* Salaried staff monthly. Others weekly.

G 27. Was payment made promptly and regularly?

Yes.

G 28. Were they paid by cash, check or due bill?

Both.

G 29. When and where were payments made?

At works.

G 30. How were wages fixed and by whom?

*Glasgow.* Standard rate of wages to all tradesmen. Scale for all others shown on engaging men.

*Manchester.* Committee.

*Liverpool.* ——

*St. Pancras.* According to trade-union rates.

*Newcastle—Supply.* Department Managers.

*Newcastle—District.* Managing Director and Secretary.

*City of London Lighting Co.* According to class and value of work by Chief Engineer.

G 31. Were union rates observed?

*Glasgow.* Yes.

*Manchester.* Yes.

*Liverpool.* ——

*St. Pancras.* Yes.

*Newcastle—Supply.* No.

*Newcastle—District.* No. We believe we have a little better.

*City of London Lighting Co.* No, but standard rates adopted if reasonable.

G 32. If there were trade agreements, state them.

None.

G 33. Was there any form of collective bargaining?

None.

G 34. Has there ever been any concerted action among employees to have wages raised or hours shortened? Describe.

*Glasgow.* Workmen who are not tradesmen have "Municipal Employees' Assoc." and through their Secretary they have asked for increase of wages or have pointed out alleged grievances to heads of departments.

*Manchester.* Petitions have been received from different grades of men for advances.

*Liverpool.* ——

*St. Pancras.* None.

*Newcastle—Supply.* None.

*Newcastle—District.* No.

*City of London Lighting Co.* About twice in ten years a few men have signed a letter asking for revision of rates and hours.

G 37. Was the municipality or company opposed to organized labor?

*City of London.* "Absolutely opposed."

Others, no.

G 38. Has there ever been a strike on the plant? If so, describe fully.

*Manchester.* Yes, amongst one section of the mechanics last summer.

Others, no.

G 39. How were labor disputes settled?

*Glasgow.* By Committee and afterwards by the whole Council.

*Manchester.* Either directly by the officials or by the Committee and men's representatives.

*Liverpool.* ——

*St. Pancras.* By Committee of the Council.

*Newcastle—Supply.* ——

*Newcastle—District.* None to settle.

*City of London Lighting Co.* None, but when they arise the agitators will go.

G 44. Were bicycles used in the business by employees? If so, how many and for what purpose?

*Glasgow.* One bicycle used by Superintendent of Street Lighting Department.

*Manchester.* Yes. Mains and Substation officials.

*Liverpool.* ——

*St. Pancras.* No.

*Newcastle—Supply.* Yes, and motor cars.

*Newcastle—District.* No.

*City of London Lighting Co.* No.

G 45. Did employees ride in the street cars for business?

*Glasgow.* Yes, but paid like any other citizen.

*Manchester.* Yes.

*Liverpool.* Yes.

*St. Pancras.* On trains and 'buses.

*Newcastle—Supply.* Yes.

*Newcastle—District.* Yes.

*City of London Lighting Co.* Where necessary.

G 46. How were their fares paid?

*Glasgow.* Either by supplying carchecks or by petty cash accounts at end of week.

*Manchester.* Generally by small tokens.

*Liverpool.* By tickets at ordinary prices.

*St. Pancras.* By Council.
*Newcastle—Supply*—By Company, weekly.
*Newcastle—District.* By Company.
*City of London Lighting Co.*—Cash on production of voucher.

G 47. Were any technical journals subscribed for?
Yes, in all cases.

G 48. Did the Superintendent or Engineer attend technical meetings?
Yes.

G 49. If so, were his expenses paid by himself?
*Glasgow.* Yes.
*Manchester.* No.
*Liverpool.* ——
*St. Pancras.* ——
*Newcastle—Supply.* Yes.
*Newcastle—District.* No.
*City of London Lighting Co.* Yes.

G 50. Number of persons killed during past year? (*a*) Employees. (*b*) Others.
None, in all cases.

G 51. Number of persons injured. (*a*) Employees. (*b*) Others.
*Glasgow.* 20.
*Manchester.* 8.
*Liverpool.* None.
*St. Pancras.* None in doing this work.
*Newcastle—Supply.* (*a*) 30.
*Newcastle—District.* Two. (*a*) One. (*b*) One.
*City of London Lighting Co.* (*a*) About 51, mostly trivial. (*b*) None.

G 52. What was the amount of damages usually paid for death?
Not answered.

## TRAMWAYS.

### E—Organization.

E 9. May they also hold other public office?
*Glasgow.* Yes, but not under City Council.
*Liverpool.* Yes.
*Dublin.* Yes.

E 10. Do they always, generally, exceptionally or never?
*Glasgow.* Yes.
*Liverpool.* Generally.
*Dublin.* Generally.

E 18. What is the official title of the chief executive officer (or officers, if more than one of equal rank)?
*Glasgow.* General Manager.
*Liverpool.* Traffic Manager.
*Dublin.* 1. Secretary. 2. Manager.

E 19. Is the head of the engineering service subordinate to the chief executive officer, co-ordinate with him or united in one man?
*Glasgow.* Subordinate.

*Liverpool.* He holds an independent position.
*Dublin.* Subject to control of Board.

E 20. Is the head of the engineering service an engineer by profession?
*Liverpool.* Yes.
*Dublin.* Yes.

E 28. How long has the present incumbent served?
*Glasgow.* Twenty-five years altogether.
*Liverpool.* Thirty years.
*Dublin.* Secretary thirty years.

E 29. Does he devote all of his time to the business?
*Glasgow.* Yes.
*Liverpool.* Yes.
*Dublin.* Yes.

E 30. What was his annual salary or pay for the last fiscal year?
*Glasgow.* £1,000.
*Liverpool.* £700.
*Dublin.* Not published.
*Norwich.* No answer.

E 31. Give titles and annual salaries of the ten highest paid subordinates of the chief executive officer for the last fiscal year.
*Glasgow.* No answer.
*Liverpool.* See Sheet.
*Dublin.* See Sheet.
*Norwich.* No answer.

E 32. Give number of all salaried officers during last fiscal year. (*a*) Total. (*b*) Average.
*Glasgow.* No answer.
*Liverpool.* (*a*) Seventy.
*Norwich.* No answer.

E 33. How are the subordinate officials and employees selected?
*Glasgow.* By the General Manager.
*Liverpool.* By competitive examination and promotion.
*Dublin.* By 1. Secretary. 2. Manager. 3. Electrical Engineer, in various departments.
*Norwich.* By Assistant Manager who also acts as Traffic Manager and Assistant Engineer.

E 34. How and by whom are they discharged?
*Glasgow.* By General Manager.
*Liverpool.* The Manager and confirmed by the Tramways and Electric Power and Lighting Committee.
*Norwich.* Assistant Manager.

E 35. What positions are filled for definite terms?
*Glasgow.* None.
*Liverpool.* No answer.
*Dublin.* None.
*Norwich.* No answer.

E 36. Who decides when and how many men are to be employed?
*Glasgow.* General Manager.

*Liverpool.* The Manager.
*Dublin.* Chief officer subject to approval of Board.
*Norwich.* Assistant Manager.

E 37. What is the usual length of service?
*Liverpool.* No answer.
*Dublin.* During good and satisfactory service.
*Norwich.* 70 per cent. of employees in service since opening.

E 38. What is the system of promotion?
*Glasgow.* No answer.
*Liverpool.* If competent from the ranks.
*Dublin.* Merit and length of service.
*Norwich.* By merit.

E 40. Is employment restricted to citizens?
*Glasgow.* No.
*Liverpool.* Yes, to a certain extent, preference being given to men who are resident in the city.
*Dublin.* No.
*Norwich.* No.

E 41. Are there any age restrictions?
*Glasgow.* No.
*Liverpool.* Yes. Conductors must not be under 21 nor over 30.
*Dublin.* No.
*Norwich.* No.

E 43. Are positions distributed among the needy?
*Glasgow.* No.
*Liverpool.* Yes, if competent.
*Dublin.* No.
*Norwich.* No.

**F—Political Conditions.**

F 2. Give the number of votes cast at the last city election and date of election.
*Liverpool.* No answer.
*Dublin.* No answer.

F 3. How many of the employees are voters?
*Liverpool.* All householders.
*Dublin.* No answer.

F 4. If any employees hold city office, state how many and what positions?
*Liverpool.* None.
*Dublin.* No answer.
*Norwich.* No.

F 5. Have the votes of employees affected city elections? Cite instances.
*Glasgow.* No.
*Liverpool.* Know of none.
*Dublin.* No answer.

F 6. Have they used political power to secure higher wages, fewer hours, etc.? Cite instances.
*Liverpool.* No answer.
*Dublin.* No answer.

F 7. Have candidates for office promised higher wages, better hours, etc., for employees? Cite cases.
*Liverpool.* No answer.
*Dublin.* No answer.

F 8. Are employees active in party work?
*Liverpool.* No.
*Dublin.* No answer.

F 9. Are they expected or required to pay political assessments?
*Liverpool.* No.
*Dublin.* No answer.

F 10. What evidence is there of the influence of private companies upon the nomination and election of members of the franchise granting and franchise controlling authorities?
*Liverpool.* None.
*Dublin.* No answer.

F 11. To whom has free service (transportation) been given?
*Liverpool.* Chief officials.
*Dublin.* Officials of company. Employees of company in uniform. Editor and chief reporters of Dublin newspaper and to certain officials of the local authorites.
*Norwich.* Police. Certain Corporation officers. Employees in uniform going to and from work.

**G—Labor.**

G 1. The following data are for the year ending:
*Glasgow.* December 31, 1905.
*Liverpool.* 1905.
*Norwich.* June 30, 1905.

G 2. What was the total number of all officers, clerks and employees for the last fiscal year?
*Liverpool.* 2,292.
*London County Council.* 7,500.

G 3. What were the dates of elections?
*Glasgow.* First Tuesday of November.
*Liverpool.* No answer.
*Dublin.* No electors.

G 4. What was the average number for the year?
*Glasgow.* One.
*Liverpool.* No answer.
*Norwich.* June, 1906, 231.

G 5. What was the average number of wage workers for the year?
*Liverpool.* No answer.
*Norwich.* No answer.

G 6. Wages paid?

*Liverpool.* No answer.

*Dublin.* No answer.

*Norwich.* No answer.

G 7. Legal maximum of hours of labor?

*Glasgow.* None. Agreement between masters and men.

*Liverpool.* No answer.

*Dublin.* None.

*Norwich.* None.

G 8. Hours of actual work.

*Liverpool.* No answer.

*Dublin.* (See Sheet.)

*Norwich.* (See Sheet.)

G 9. How was overtime paid for?

*Liverpool.* At per hour.

*Dublin.* Generally as time and one-half.

*Norwich.* Men in employ of Engineering Department 1¼ time. Others at ordinary rate.

G 10. State what vacation, including holidays, with pay was allowed to wage workers.

*Glasgow.* All employees allowed five days holiday with pay after six months satisfactory service.

*Liverpool.* Drivers, conductors and inspectors one week with pay.

*Dublin.* Traffic Staff, one day off in twelve at full pay after first year. Others two weeks to one month according to rank and length of service.

*Norwich.* Only foremen, engineers and inspectors get one week.

G 11. State what vacation with pay was allowed to salaried employees.

*Glasgow.* Salaried Staff allowed fourteen days annually with pay.

*Liverpool.* 14 days less 10 years service. 21 days over 10 years service with full pay.

*Norwich.* Inspectors one week. Officials two weeks, per annum.

G 12. State what allowance was made to wage workers for sick leave.

*Glasgow.* No allowance was made for sick leave, but a Departmental Society and receive from this.

*Liverpool.* Each case considered on its merits. Have Sick Benefit Society.

*Dublin.* None.

*Norwich.* Co. pay to Benefit Society 30 per cent.

G 13. State what allowance was made to salaried employees for sick leave.

*Glasgow.* Allowed full pay at discretion of General Manager.
*Liverpool.* Full pay is allowed.
*Dublin.* Allowed pay during illness.
*Norwich.* No special allowance. Inspectors a week.

G 14. In case of accident to employees, who paid medical expenses?

*Glasgow.* Medical attendance paid by Accident Insurance Co. under Employer's Liability Policy for first visit. If employee is member of Departmental Friendly Society no charge for subsequent visits.
*Liverpool.* Men's Benefit Society.
*Dublin.* Company.
*Norwich.* Insurance Co.

G 15. Who paid for badges and uniforms?

*Glasgow.* Paid for by the Company.
*Liverpool.* Tramways and Electric Power and Lighting Co.
*Dublin.* Company.
*Norwich.* Company pays for badges and uniforms. Men 2/3. Co. 1/3.

G 16. Were employees required to give surety bonds?

*Glasgow.* No security asked from any employee except office staff.
*Liverpool.* No.
*Dublin.* Yes.
*Norwich.* Conductors deposit £2.

G 17. Who paid the premiums?

*Glasgow.* By Corporation on surety bonds.
*Liverpool.* No answer.
*Dublin.* None. Bonds must be personal.
*Norwich.* Company.

G 18. What provision was made for technical instruction?

*Glasgow.* Fully equipped school fitted out at the depots where motormen were instructed by experienced engineers.
*Liverpool.* Six months training as motormen.
*Dublin.* No.
*Norwich.* Taught in cars and afterwards examined.

G 19. Were prizes offered for faithful service?

*Glasgow.* No prizes offered, but those with longer service get a gradual increase in wage. Motormen who keep clear of accidents for 26 weeks get a bonus of one shilling per week.
*Liverpool.* Merit pay granted for long and faithful service.
*Dublin.* No. Promotion the only reward.

G 20. Describe system of profit sharing, if any.

*Glasgow.* No system of profit sharing.

*Liverpool.* None.
*Dublin.* None.
*Norwich.* None.

G 21. Describe pension system for old age and infirm employees.
*Glasgow.* Departmental Friendly Society. Members paid death allowance. Free medical advice and medicines. Free admission to hospitals and Convalescent Homes.
*Liverpool.* System now being propounded. Not quite complete.
*Dublin.* None.
*Norwich.* None.

G 22. Did local benefit associations exist among employees?
*Glasgow.* Yes.
*Liverpool.* Yes.
*Dublin.* Yes.
*Norwich.* A sick club.

G 23. If there were, did municipality or company contribute to the funds?
*Glasgow.* Municipality contribute to Friendly Society Funds and to Superannuation Funds.
*Liverpool.* Yes. Tramways and Electric Power and Lighting Com. contribute.
*Dublin.* Company contributed.
*Norwich.* Co. contributes £50 per year.

G 24. What other methods were used by the municipality or company to improve the social welfare, such as club houses, libraries, gymnasiums, excursions, toilet facilities, etc.?
*Glasgow.* Recreation room in depots, Football clubs, Cricket clubs, ambulance classes, swimming clubs, draught clubs, chess clubs, temperance societies, social clubs, etc.
*Liverpool.* Social Athletics and Thrift Society. Club room at each depot.
*Dublin.* Lunch rooms and cooking facilities. Excursions given annually to part of staff, etc.
*Norwich.* Cricket Club. Concerts in winter. Excursions in summer.

G 25. Did employees get free service or gratuities of any sort? If so, what?
*Glasgow.* Employees get no gratuities of any kind.
*Liverpool.* Free service to and from duty. No gratuities.
*Dublin.* Yes. When in uniform travel free to and from work.
*Norwich.* Free service to and from work.

G 26. How frequently were different classes of employees paid?
*Glasgow.* Office staff monthly. All others weekly.
*Liverpool.* Weekly and monthly.
*Dublin.* Weekly.
*Norwich.* Weekly.

G 27. Was payment made promptly and regularly?

*Glasgow.* Payments of wages promptly and regularly made on same day at same time each week and on last day of each month.

*Liverpool.* Yes.

*Dublin.* Yes.

*Norwich.* Yes, each Saturday.

G 28. Were they paid by cash, check or due bill?

*Glasgow.* Cash.

*Liverpool.* Cash.

*Dublin.* Cash.

*Norwich.* Cash.

G 29. When and where were payments made?

*Glasgow.* Office staff paid at office. Wages of all other men paid at depots or on street where they may be at work.

*Liverpool.* Depots and Termini.

*Dublin.* General office is central and wages are sent to those who cannot reach office.

*Norwich.* At each department.

G 30. How were wages fixed and by whom?

*Glasgow.* Wages fixed by Tramways Committee and approved by City Council.

*Liverpool.* Tramways and Electric Power and Lighting Com. and confirmed by City Council.

*Dublin.* By chief officers in various departments.

*Norwich.* Engineer and Manager.

G 31. Were union rates observed?

*Glasgow.* In case of artisans and laborers the standard rate of wages recognized by the masters and men in the district always paid.

*Liverpool.* No union in Liverpool.

*Dublin.* Co. pays as much as union rates.

*Norwich.* No.

G 32. If there were trade agreements, state them.

*Glasgow.* Corporation of Glasgow always conform to any trade agreements that are made by outside masters.

*Liverpool.* No answer.

*Dublin.* None.

*Norwich.* No answer.

G 33. Was there any form of collective bargaining?

*Glasgow.* No system of collective bargaining.

*Liverpool.* No.

*Dublin.* None.

*Norwich.* No. Employees have no union.

G 34. Has there ever been any concerted action among employees to have wages raised or hours shortened? Describe.

*Glasgow.* Never been any.

*Liverpool.* Everything has been settled without objection.

*Dublin.* None.

*Norwich.* Yes, for increase of wages and also for extra time allowance.

G 35. Were the employees organized in unions?

*Glasgow.* Motormen and conductors and all members of the traffic staff not organized in any way. Artisans generally members of their own trade unions.

*Liverpool.* See No. 31.

*Dublin.* No.

*Norwich II.* No.

G 36. Was the "closed shop" or "open shop" policy in force?

*Glasgow.* Corporations do not confine themselves to men who are members of trade-unions.

*Liverpool.* No answer.

*Dublin.* Open shop.

G 37. Was the municipality or company opposed to organized labor?

*Glasgow.* No.

*Liverpool.* No feeling in the matter.

*Dublin.* No.

G 38. Has there ever been a strike on the system? If so, describe fully.

*Glasgow.* Never been any strike on Tramway system.

*Liverpool.* No.

*Dublin.* No answer.

*Norwich II.* No.

G 39. How were labor disputes settled?

*Glasgow.* No labor disputes.

*Liverpool.* No labor disputes.

*Dublin.* No answer.

G 40. Were the laws relating to health, employer's liability, and contract labor observed?

*Glasgow.* Rigidly observed by municipality.

*Liverpool.* Yes.

*Dublin.* Yes.

*Norwich II.* Yes.

G 41. Were there any printed or written instructions to employees? If so, enclose copies.

*Glasgow.* Yes.

*Liverpool.* No answer.

*Dublin.* Yes.

*Norwich II.* No answer.

G 42. How were employees treated by management?

*Glasgow.* Corporations fix the general conditions of service and these rigidly adhered to. Strict discipline insisted on among all sections of the staff.

*Liverpool.* Well.

*Dublin.* Generously.

*Norwich II.* No answer.

G 43. Did employees have a share in the management of the system?

*Glasgow.* General Manager is entirely responsible for management of the system.

*Liverpool.* Through their representatives in the City Council.
*Dublin.* No.
*Norwich II.* No.

G 44. Were bicycles used in the business by employees? If so, how many and for what purpose?
*Glasgow.* No.
*Liverpool.* None used.
*Dublin.* No answer.
*Norwich II.* No.

G 45. Did employees ride in the street cars for business?
*Glasgow.* Only uniformed officials ride in street cars. If others have occasion to do so, they are given tokens which are accepted by the conductors.
*Liverpool.* Uniformed men, free service to and from duty.
*Dublin.* See before.
*Norwich II.* Yes.

G 46. How were their fares paid?
*Glasgow.* Tokens (1d. and ½d.) sold at face value to Public Work's shops, warehouses, etc., for use of messengers.
*Liverpool.* Allowed to travel free in uniform.
*Dublin.* Not paid.
*Norwich II.* Free.

G 47. Were any technical journals subscribed for?
*Glasgow.* A considerable number of technical journals subscribed for, for use of General Manager and his chief assistants.
*Liverpool.* Yes.
*Dublin.* Yes.
*Norwich II.* Yes.

G 48. Did the Superintendent or Engineer attend technical meetings.
*Glasgow.* General Manager and heads of departments attend meetings of Tramways' Association and also meetings of Engineering Societies.
*Liverpool.* Yes.
*Dublin.* Yes.
*Norwich II.* Yes.

G 49. If so, were his expenses paid by himself?
*Glasgow.* Expenses of General Manager and staff attending meetings paid by Corporation.
*Liverpool.* Yes.
*Dublin.* Company paid.
*Norwich II.* No answer.

G 50. Number of persons killed during past year. (*a*) Employees. (*b*) Others.
*Glasgow.* 1905, 19. (*a*) None. (*b*) 19.
*Liverpool.* Four. (*a*) ..... (*b*) 4.
*Dublin.* Three. (*a*) Nil. (*b*) 3.
*Norwich II.* One. (*b*) One child.

G 51. Number of persons injured: (*a*) Employees. (*b*) Others.
*Glasgow.* 2,893. (*a*) 105. (*b*) 2,788.
*Liverpool.* No answer.
*Dublin.* (*a*) 39. (*b*) 710. (9 *b* claims only).
*Norwich II.* (*b*) 5.

G 52. What was the amount of damages usually paid for death?
*Glasgow.* Paid by Accident Insurance Co. Consequently no record of sums actually paid.
*Liverpool.* Each claim settled on its merits.
*Dublin.* Cannot recall any case.
*Norwich II.* Settled by Insurance Co.

G 53. Were payments for injuries usually adequate?
*Liverpool.* No answer.
*Dublin.* Accident Insurance Co. paid by company a fixed sum per annum and undertake all liability as to third party and employer's risk.
*Norwich II.* The Co. consider it is.

G 54. Were cases usually settled without lawsuit?
*Glasgow.* Almost all claims settled by Accident Insurance Co. out of court.
*Liverpool.* Yes, the majority.
*Dublin.* Yes.
*Norwich II.* Yes.

G 55. May the municipality or company compromise or settle claims without lawsuits?
*Glasgow.* Claims may be settled without lawsuits.
*Liverpool.* Yes.
*Dublin.* Yes.
*Norwich II.* Yes.

## Glasgow.

### RATES OF WAGES PAID AT GAS WORKS.

| Occupation | Tradeston | | | Provan | | |
|---|---|---|---|---|---|---|
| | No. Men. | | Rate. | No. Men. | | Rate. |
| Retort Foremen | 3 | per week. | 50/– | 3 | per week. | 50/– |
| Bench Foremen | 6 | per hour. | 9¾d. | 6 | per hour. | 10 d. |
| Pot-men | 45 | " | 7⅛d. | .. | ..... | ..... |
| Generatormen | .. | ..... | ..... | 12 | " | 7⅞d. |
| Pipemen | 18 | " | 7⅞d. | 18 | " | 7⅞d. |
| Machinemen | 36 | " | 7½d. | 36 | " | 7½d. |
| Ashmen | 46 | " | 7⅛d. | 21 | " | 7⅛d. |
| Door-openers | .. | ..... | ..... | 18 | " | 7½d. |
| Door-closers | 36 | " | 6¾d. | 18 | " | 6¾d. |
| Coal Breakers | 12 | " | 6⅛d.-6½d. | 12 | " | 5¾d.-6⅛d. |
| Tunnelmen | .. | ..... | ..... | 18 | " | 6¾d. |
| Tunnel Foremen | .. | ..... | ..... | 3 | " | 8⅛d. |
| Coke quenchers | 25 | " | 6 d. | 9 | " | 6 d. |
| Exhaustermen | 3 | " | 7½d. | 3 | " | 7½d. |
| Metermen | 3 | " | 7⅞d. | 3 | " | 7⅞d. |
| Boilermen | 6 | " | 6d.-6½d. | 6 | " | 6⅛d. |
| Dreepmen | .. | ..... | ..... | 4 | " | 5½d.-6½d. |
| Pumps | 3 | " | 6½d. | 3 | " | 6½d. |
| Donkeymen | 3 | " | 5⅝d. | .. | ..... | ..... |
| Pug Drivers | 15 | " | 5½d. | 12 | " | 5⅝d. |
| Pug Shunters | 15 | " | 5⅝d. | 6 | " | 5½d. |
| Watering Ashes | 6 | " | 5⅝d. | .. | ..... | ..... |
| Coke Trimmers | 4 | " | 6¾d. | 9 | " | 6 d. |
| Purifier Foremen | 1 | per week. | 35/– | 1 | per week. | 38/– |
| Purifiermen | 40 | per hour. | 5.08d.-5.832d. | 40 | per hour. | 5.08d.-5.832d. |
| Lime Burners | 7 | " | 5½d.-7½d. | 1 | per ton. | 7.85d. |
| Cranemen | 5 | " | 7d. | .. | ..... | ..... |
| Bucketmen | 6 | " | 5⅝d. | .. | ..... | ..... |
| Tar Pump | 1 | " | 5⅝d. | .. | ..... | ..... |
| Yard Foremen | 2 | " | 5½d.-6 d. | 1 | per week. | 40/– |

| Occupation. | Tradeston | | | Provan | | |
|---|---|---|---|---|---|---|
| | No. Men. | | Rate. | No. Men. | | Rate. |
| Motormen | .. | ..... | ..... | 1 | – per hour. | 6½d. |
| Gas Engine | .. | ..... | ..... | 3 | " | 6½d. |
| Coke Laborers | 52 | " | 5.08d. | 4 | " | 5.08d. |
| Cyanide | .. | ..... | ..... | 3 | " | 7 d. |
| Stablemen | 2 | per day. | 4/2d.-5/– | .. | ..... | ..... |
| Carters | 14 | per hour. | 5½d. | .. | ..... | ..... |
| Bricklayers' Foremen | 1 | per week. | 52/– | 1 | per week. | 55/– |
| Leading Bricklayers | .. | ..... | ..... | 1 | per hour. | 10½d. |
| Bricklayers | 21 | per hour. | 9½d. | 4 | " | 9½d. |
| Mason | 1 | " | 9d. | .. | ..... | ..... |
| Foremen Scurfer | .. | ..... | ..... | 1 | per week. | 42/– |
| Retort Scurfers | 11 | " | 7½d. | 13 | per hour. | 6 d. |
| Foremen Joiners | 1 | per week. | 42/– | 1 | per week. | 45/– |
| Joiners | 2 | per hour. | 9 d. | 4 | per hour. | 9½d. |
| Slaters | 1 | " | 8½d. | 1 | " | 9 d. |
| Painters | 1 | " | 9 d. | 3 | " | 9 d. |
| Causewayer | .. | ..... | ..... | 1 | " | 7½d. |
| Foremen Fitters | 1 | per week. | 50/– | 1 | per week. | 45/– |
| Blacksmiths | 4 | per hour. | 8½d.-8½d. | 4 | per hour. | 7½d.-8 d. |
| Hammermen | 5 | per hour. | 5½d. | 4 | " | 5½d. |
| Engineers | 18 | " | 8d.-8½d. | 11 | " | 7½d.-8½d. |
| Engineers' Assistants | .. | ..... | ..... | 6 | " | 7 d.-7½d. |
| Plumber and Tinsmith | 1 | " | 8½d. | 2 | " | 7½d.-8½d. |
| Riggers | 2 | " | 6½d. | 1 | " | 6½d. |
| Handymen and Laborers | 83 | " | 5.08d.-6½d. | 90 | " | 5.08d.-6½d. |
| Foreman Platelayer | 1 | per week. | 30/– | 1 | per week. | 30/– |
| Platelayers | .. | ..... | ..... | 12 | per hour. | 5½d.-6 d. |
| Coal Foremen | 1 | " | 35/– | 1 | per week. | 44/– |
| Coal Emptiers | 38 | per hour. | 5.832d. | 7 | per hour. | 5½d. |
| Loco. Drivers | 3 | " | 7 d. | 3 | " | 7½d. |
| Loco. Shunters | 3 | " | 6½d. | 6 | " | 6½d. |
| Coal Weighers | 1 | per day. | 5/– | 2 | per day. | 5/4d. & 3/8d. |
| Gatemen | 3 | per week. | 28/9d. | 3 | per week. | 28/6d. |

**Manchester Corporation Gas Works.**
*Bradford Road Station.*

| *No. of Men.* | *Occupation.* | *Hours Worked.* | *Rate of Pay Per Hour, Day, or Week.* | *Amount Earned Weekly Per Man.* £ | *s.* | *d.* |
|---|---|---|---|---|---|---|
| | Carbonization: | | | | | |
| 3 | Foremen | 8 | 52/6 | 2 | 12 | 6 |
| .. | Sub-Foremen | .. | .... | ..... | | |
| 36 | Machinemen | 8 | 5/9 | 1 | 14 | 6 |
| 87 | Buttyers, Attendants.... | " | 5/3 | 1 | 11 | 6 |
| | Closing Lids, Attendants | " | 5/3 | 1 | 11 | 6 |
| | Opening Pipes, Attendants | " | 5/3 | 1 | 11 | 6 |
| | Filling Furnaces, Attendants | " | 5/3 | 1 | 11 | 6 |
| 51 | Coke Wheelers | " | 4/5 | 1 | 6 | 6 |
| 12 | Patchers | " | 5/7 | 1 | 13 | 6 |
| 12 | Enginemen and Boilermen | " | 5/3 | 1 | 11 | 6 |
| 16 | Firemen | " | 5/3 | 1 | 11 | 6 |
| 12 | Cannel Breakers (Engines) | " | 4/9 | 1 | 8 | 6 |
| .. | Hopper Fillers | .. | .... | ..... | | |
| 14 | Stackmen | 8 | 1 at 5/7<br>13 at 5/3 | 1 | 13 | 6 |
| | | | | 1 | 11 | 6 |
| 243 | | | | | | |
| | Tradesmen: | | | | | |
| 1 | Foreman Bricklayer | 54½ | 54/– | 2 | 14 | 0 |
| 7 | Bricklayers | " | 10d. | 2 | 5 | 5 |
| 1 | Foreman Mechanic | 53 | 60/– | 3 | 0 | 0 |
| 6 | Mechanics | " | 38/– | 1 | 18 | 0 |
| 3 | Turners | " | 38/– | 1 | 18 | 0 |
| 2 | Drillers and Planers | " | 30/– | 1 | 10 | 0 |
| 1 | Foreman Joiner | 54½ | 10d. | 2 | 5 | 5 |
| 4 | Joiners | " | 9½d. | 2 | 3 | 2 |
| 1 | Pattern Maker | 53 | 41/– | 2 | 1 | 0 |
| 1 | Wheelwright | 54½ | 36/– | 1 | 16 | 0 |
| 2 | Barrowsmiths | 53 | 39/6 | 1 | 19 | 6 |
| | | 54½ | 29/5 | 1 | 9 | 5 |
| 1 | Plumber | " | 9½d. | 2 | 3 | 2 |
| 2 | Masons | " | 9½d. | 2 | 3 | 2 |
| 1 | Foreman Blacksmith | 53 | 42/– | 2 | 2 | 0 |
| 2 | Blacksmiths | " | 1 at 38/–<br>1 at 36/– | 1 | 18 | 0 |
| | | | | 1 | 16 | 0 |
| 1 | Painter | 54½ | 8½d. | 1 | 18 | 7 |
| 36 | | | | | | |
| | Other Workmen: | | | | | |
| 6 | Pipe Fitters | 54½ | Foreman 7½d.<br>4/2 | 1 | 14 | 1 |
| | | | | 1 | 5 | 0 |
| 4 | Smiths' Strikers | " | 1 at 26/3<br>3 at 25/2 | 1 | 6 | 3 |
| | | | | 1 | 5 | 2 |
| 1 | Foreman Purifier | " | 6/– | 1 | 16 | 0 |
| 12 | Purifiermen | .. | Piecework. | *1 | 16 | 0 |
| 20 | Carters, etc | 54½ | 1 at 45/–<br>1 at 5/3<br>18 at 4/5 | 2 | 5 | 0 |
| | | | | 1 | 11 | 6 |
| | | | | 1 | 6 | 6 |

* Average.

| No. of Men. | Occupation. | Hours Worked. | Rate of Pay Per Hour, Day, or Week. | Amount Earned Weekly Per Man. £ | s. | d. |
|---|---|---|---|---|---|---|
| 6 | Mechanics' Laborers.... | " | 4/2 | 1 | 5 | 0 |
| 3 | Pressuremen ..... | 8 | 5/7 | 1 | 13 | 6 |
| 1 | Yard Foreman..... | 54½ | 6/4 | 1 | 18 | 0 |
| 1 | Railway Foreman..... | " | 55/– | 2 | 15 | 0 |
| 8 | Cannel Discharges..... | " | 4/2 | 1 | 5 | 0 |
| 24 | Coke Trimming and Loading ..... | " | 4/2 | 1 | 5 | 0 |
| 2 | Pipe Layers..... | " | 5/– | 1 | 10 | 0 |
| 3 | Crane Drivers..... | " | 4/9 | 1 | 8 | 6 |
| 2 | Gatekeepers ..... | " | 33/– | 1 | 13 | 0 |
| 1 | Storekeeper ..... | " | 35/– | 1 | 15 | 0 |
| 2 | Locomotive Drivers..... | " | 5/3 | 1 | 11 | 6 |
| 1 | Signalman ..... | " | 4/2 | 1 | 5 | 0 |
| 3 | Joint Makers..... | " | 1 at 5/7<br>2 at 4/9 | 1 | 13 | 6 |
| | | | | 1 | 8 | 6 |
| 33 | Youths ..... | " | 2/– to 3/2 | 12/– | to | 19/– |
| 59 | General Laborers..... | " | 4/2 to 4/6 | 1 | 5 | 0 |
| | | | | 1 | 7 | 0 |
| 192 | | | | | | |
| 516 | (Including C. W. G.) | | | | | |

*Bradford Road Station (Carburetted Water Gas).*

| No. of Men. | Occupation. | Hours Worked. | Rate of Pay Per Hour, Day, or Week. | Amount Earned Weekly Per Man. £ | s. | d. |
|---|---|---|---|---|---|---|
| | Carburetted Water Gas: | | | | | |
| 2 | Foremen Operators..... | 8 | 5/9 | 1 | 14 | 6 |
| 8 | Operators ..... | " | 5/3 | 1 | 11 | 6 |
| 4 | Helpers ..... | " | 4/2 | 1 | 5 | 0 |
| 6 | Enginemen and Boilermen ..... | " | 5/3 | 1 | 11 | 6 |
| 2 | Laborers (Generators). | 54½ | 4/5 | 1 | 6 | 6 |
| | | | 4/2 | 1 | 5 | 0 |
| 12 | Clinkerers ..... | .. | Piecework. | *2 | 2 | 3 |
| 6 | Purifiermen ..... | .. | Piecework. | *2 | 0 | 0 |
| 4 | Carters ..... | 54½ | 2 at 4/10 | 1 | 9 | 0 |
| | | | 2 at 4/– | 1 | 4 | 0 |
| 1 | Foreman (Mode Wheel Depot) ..... | 8 | 60/– | 3 | 0 | 0 |
| 45 | | | | | | |

*Droylsden Station.*

| No. of Men. | Occupation. | Hours Worked. | Rate of Pay Per Hour, Day, or Week. | Amount Earned Weekly Per Man. £ | s. | d. |
|---|---|---|---|---|---|---|
| 2 | Foremen Carbonizers... | 8 | 5/9 | 1 | 14 | 6 |
| 10 | Retortmen ..... | " | 5/3 | 1 | 11 | 6 |
| 6 | Laborers ..... | 54½ | 4/2 | 1 | 5 | 0 |
| 18 | | | | | | |

* Average.

*Street Mains and Lighting Department.*

| No. of Men. | Occupation. | Hours Worked. | Rate of Pay Per Hour, Day, or Week. | Amount Earned Weekly Per Man. £ | s. | d. |
|---|---|---|---|---|---|---|
| | **Street Mains:** | | | | | |
| 1 | Inspector | 54½ | 50/- | 2 | 10 | 0 |
| 4 | Foremen | " | 3 at 44/- | 2 | 4 | 0 |
| | | | 1 at 40/- | 2 | 0 | 0 |
| 3 | Sub-Foremen | " | 33/6 | 1 | 13 | 6 |
| 1 | Storekeeper | " | 40/- | 2 | 0 | 0 |
| 2 | Blacksmiths | " | 30/- and 36/- | 1 | 10 | 0 |
| | | | | 1 | 16 | 0 |
| 4 | Main Pipe Gangers | " | 33/6 | 1 | 13 | 6 |
| 1 | Fitter | " | 38/6 | 1 | 18 | 6 |
| 19 | Gas Tubers | " | 24/- to 33/6 | 1 | 4 | 0 |
| | | | | 1 | 13 | 0 |
| 9 | Carters | " | 25/- | 1 | 5 | 0 |
| 98 | Pipe Layers | " | 25/- to 32/- | 1 | 5 | 0 |
| | | | | 1 | 12 | 0 |
| 100 | General Laborers | " | 22/- to 24/- | 1 | 2 | 0 |
| | | | | 1 | 4 | 0 |
| 242 | | | | | | |
| | **Lamp Lighting:** | | | | | |
| 1 | Inspector | .. | 40/- | 2 | 0 | 0 |
| 14 | Foremen | .. | 25/- to 27/6 | 1 | 5 | 0 |
| | | | | 1 | 7 | 6 |
| 134 | Lamplighters | .. | 25/- | 1 | 5 | 0 |
| 16 | Cleaners | .. | 25/- | 1 | 5 | 0 |
| 165 | | | | | | |

Men in the Street Mains Department work 54½ hours per week for 39 weeks, and rather more than 46 hours during three winter months, giving an average of about 53 hours per week for the year.

*Stoves Show Room (Deansgate) and Meter Repairing Shop (Gaythorn).*

| No. of Men. | Occupation. | Hours Worked. | Rate of Pay Per Hour, Day, or Week. | Amount Earned Weekly Per Man. £ | s. | d. |
|---|---|---|---|---|---|---|
| | **Stoves Show Room:** | | | | | |
| 1 | Foreman Inspector | 50½ | 46/- | 2 | 6 | 0 |
| 7 | Inspectors | " | 25/6 to 38/- | 1 | 5 | 6 |
| | | | | 1 | 18 | 0 |
| 1 | Foreman | " | 42/- | 2 | 2 | 0 |
| 18 | Repairers, etc | " | 3/4 to 5/2 | 1 | 0 | 0 |
| | | | | 1 | 11 | 0 |
| 15 | Gas Fitters | " | 9d and 9½d. | 1 | 17 | 11 |
| | | | | 2 | 0 | 0 |
| 2 | Youths | " | 1/2 and 1/5 | 7/- and 8/6 | | |
| 44 | | | | | | |
| | **Meter Repairing Shop:** | | | | | |
| 8 | Repairers, etc | 54½ | 5 at 6/- | 1 | 16 | 0 |
| | | | 1 at 4/6 | 1 | 7 | 0 |
| | | | 2 at 4/4 | 1 | 6 | 0 |
| 3 | Youths | " | 1/4 to 2/6 | 8/- to 15/- | | |
| 11 | | | | | | |

*Holidays*—Four days allowed, for which the men receive their usual pay.

*Overtime*—Men working eight-hour shifts are allowed time and a half for Sunday labor, three shifts. Tradesmen and Smiths' Strikers, time and quarter, 5.30 to 7.30 P. M.; time and half, 7.30 to 9.30; and double time afterwards. Fitters' Laborers, time and quarter, 5.30 to 7. 30 P. M.; time and half afterwards. Joiners' Laborers, time and quarter. General Laborers, time and quarter.

*Sunday Labor*—Tradesmen and Smiths' Strikers, double time. Tradesmen's Laborers, time and half. General Laborers, time and half.

### City of Birmingham Gas Department.

SCHEDULE OF WORK AND WAGES—BOTH WORKS.

*Agreement with Gas Workers' Union, November, 1900.*

*Saltley.*

| *Workmen.* | *Work.* | *Fires. Stint per Man.* | *8 hrs. per Day. Rate of Wages.* |
|---|---|---|---|
| Stokers ..... | Drawing and charging retorts, "sevens," including luting lids, quenching, coke, and trying pipes..... | 25 | 5/6 |
| Ditto ..... | Drawing and charging retorts, "sevens," patent lids, quenching coke, and trying pipes..... | 27 | 5/6 |
| Ditto ..... | Drawing and charging retorts, "sevens," "eights," or "nines," patent lids, no quenching, pipes to try..... | 27 | 5/6 |
| Ditto ..... | Charging after rakes on "sevens," including luted lids, or on "eights" or "nines" with patent lids and stage to move; no pipes to try nor coke to quench ..... | 48 | 5/6 |
| Ditto ..... | Charging after rakes on "sevens," "eights," or "nines," no stage to move, no pipes to try, nor coke to quench; patent lids..... | 55 | 5/6 |
| Ditto ..... | Drawing retorts on "eights" or "nines," patent lids, stage to move, no pipes to try nor coke to quench..... | 48 | 5/6 |
| Stokers ..... | Drawing retorts on "sevens," "eights," or "nines," patent lids, no stage to move, no pipes to try, nor coke to quench ..... | 55 | 5/6 |
| Ditto ..... | Drawing and charging on "eights" or "nines," patent lids, with stage to move, pipes to try, but no coke to quench ..... | 27 | 5/6 |
| | | *Mouth-pieces.* | |
| Machinemen.. | Drawing retorts, moving machines, raising, lowering, oiling, etc., also attending to three regenerative fires below only; 6 hour charges..... | 202 to 203 | 5/9 |
| Ditto ..... | Charging retorts, moving machines, raising, lowering, oiling, etc., also attending to three regenerative fires below only; 6 hour charges..... | 202 to 203 | 5/9 |

| *Workmen.* | *Work.* | *Mouthpieces. Stint per Man.* | *8 hrs. per Day. Rate of Wages.* |
|---|---|---|---|
| Machineman's Assistant... | Backing-up after chargers, also attending to three regenerative fires below only; 6 hour charges..... | 202 to 203 | 5/6 |
| Machinemen.. | Drawing retorts, moving machines, raising, lowering, oiling, etc., also attending to two regenerative furnaces below only; 5 hour 20 min. charges ..... ..... | 228 | 5/9 |
| Ditto ..... | Charging retorts, moving machines, raising, lowering, oiling, etc., also attending to two regenerative fires below only; 5 hour 20 min. charges. | 228 | 5/9 |
| Machineman's Assistant... | Backing-up after chargers, also attending to two fires below only; 5 hour 20 min. charges..... | 228 | 5/6 |
| Machinemen.. | Charging retorts, including raising, lowering, oiling, etc., two sets of machines on Nos. 1 and 2 ranges, No. 3 Retort House, including charging odd retorts, which cannot be charged by machines; no fires to attend to; 5 hour 20 min. charges..... | 220 | 5/9 |
| Ditto ..... | Drawing retorts, including raising and lowering but one set of machines, oiling and cleaning two sets of machines on Nos. 1 and 2 ranges No. 3 Retort House, including charging odd retorts, which cannot be charged by machines; no fires to attend to; 5 hour 20 min. charges..... | 220 | 5/9 |
| Ditto ..... | Drawing or charging retorts, including raising and lowering, oiling, etc., two sets of machines on Nos. 1 and 2 ranges No. 3 Retort House, including charging odd retorts, which cannot be charged by machines; 6 hour charges, with one fire each to attend to below only..... | 196 | 5/9 |
| Machineman's Assistant... | Backing up after chargers on Nos. 1 and 2 ranges, No. 3 Retort House, assisting hoist, two sets of rakes, and charging odd retorts, which cannot be charged by machines; no fires to attend to; 5 hour 20 min. charges.. | 220 | 5/6 |
| Ditto ..... | Ditto ditto as above; 6 hour charges, with one fire to attend to below only | 196 | 5/6 |
| | | *Fires.* | |
| Firemen ..... | Attending ordinary fires, "fives," "sixes," or "sevens," with or without secondary air supplies..... | 9 | 5/6 |
| Ditto ..... | Attending regenerators, "sevens," "eights," or "nines," top and bottom with clinkering..... | 6 | 5/6 |

| *Workmen.* | *Work.* | *8 hrs. Fires. per Day. Stint per Man.* | *Rate of Wages.* |
|---|---|---|---|
| Firemen ..... | Attending regenerators, "sevens," "eights," or "nines," top or bottom only ..... | 12 | 5/6 |
| Coal Wheelers. | Wheeling from trucks..... | 102 | 5/- |
| Ditto ..... | From stock up to 40 yards from Retort House ..... | 83 | 5/- |
| Ditto ..... | Ditto beyond 40 yards from Retort House ..... | 69 | 5/- |
| Ditto ..... | Ditto into No. 1 or 4 coal crushers up to 68 yards from the crushers..... | 83 | 5/- |
| Ditto ..... | Ditto over 68 yards from the crushers... | 69 | 5/- |
| Coal Unloaders... | Into coal crushers direct from trucks... | .. | ... |
| Coke Wheelers | Wheeling coke to outside of Retort Houses, through usual doorways, to a maximum distance of about 20 yards, other men being engaged to take coke up mounds; from ordinary or secondary air settings, no quenching ..... | 78 | 5/- |
| Ditto ..... | From regenerative settings "sevens," no quenching, firing side, 89 mouthpieces, no quenching, opposite side, 67 mouthpieces, average..... | 78 | 5/- |
| Ditto ..... | From subways of Nos. 1 and 2 ranges, No. 3 Retort House, with quenching, firing side, 75 mouthpieces, opposite side, with quenching, 57, average.. | 66 | 5/- |
| Ditto ..... | From No. 3 range, No. 3 Retort House, settings, of "eights" or "nines," with quenching, firing side 84 mouthpieces, opposite side, with quenching, 57 mouthpieces, average | 70 | 5/- |
| Coke Wheelers | From No. 4 range, No. 3 Retort House, settings of "eights" or "nines," with quenching, firing side, 75 mouthpieces, opposite side, with quenching, 57 mouthpieces, average | 66 | 5/- |
| Ditto ..... | From firing side No. 4 range, No. 3 house, where coke is tipped into the conveyor hopper with coke to quench, hopper made workable..... | 97 | 5/- |
| Coke Runners Away ..... | To run coke up mounds per 8 hour shift | .. | 5/- |
| Pullers-up ... | To pull barrows up coke mounds when extra steep, per 8 hour shift..... | .. | 4/- |
| Breeze Wheelers .. | To run breeze into Retort Houses, and put it on the fires per 8 hour shift, and men cleaning up coal and other odd jobs..... | .. | 4/- |
| Coke Mounds Men ..... | To look after coke mounds, per 8 hour shift ..... | .. | 4/6 |
| Pipe Jumpers | Per 8 hour shift, maximum, for 2 men.. | 228 | 5/3 |
| Hot Retort Menders ... | Per 8 hour shift, ordinary..... | .. | 4/6 |

| *Workmen.* | *Work.* | *Stint per Man.* | *Rate of Wages.* |
|---|---|---|---|
| Ditto ..... | Per 8 hour shift, after machines..... | .. | 5/– |
| Scurfers ..... | Ditto ditto..... | .. | 4/6 |
| Lidcleaners .. | Per 8 hour shift..... | .. | 4/6 |
| Purifiers (day work) ..... | Per day of 9 hours (53 per week).... Time and half to be paid to the firemen who come in on Sundays to get fires ready from 6 a. m. to 10 p. m. | .. | 4/9 |

*Swan Village.*

| *Workmen.* | *Work.* | *Stint per Man. Based upon Saltley. Mouthpieces.* | *Rate of Wages. 8 hrs. per Day.* |
|---|---|---|---|
| Stokers ..... | Drawing and charging retorts, trying pipes, and quenching coke, luted lids | 25 | 5/6 |
| Ditto ..... | Ditto ditto (No. 1 Retort House)..... | 31 | 5/6 |
| Ditto ..... | Ditto Patent lids, quenching coke, and trying pipes..... | 27 | 5/6 |
| Machinemen.. | Drawing retorts, moving machines, raising, lowering, oiling, etc., also attending to three regenerative fires below only; 6 hour charges..... | 202 to 203 | 5/9 |
| Ditto ..... | Charging retorts, moving machines, raising, lowering, oiling, etc., also attending to three regenerative fires below only; 6 hour charges..... | 202 to 203 | 5/9 |
| Machineman's Assistant... | Backing up after chargers, also attending to three regenerative fires below only; 6 hour charges..... | 202 to 203 | 5/6 |
| Machinemen.. | Drawing retorts, moving machines, raising, lowering, oiling, etc., also attending to two regenerative furnaces below only; 5 hour 20 min. charges ..... | 228 | 5/9 |
| Ditto ..... | Charging retorts, moving machines, raising, lowering, oiling, etc., also attending to two regenerative furnaces below only; 5 hour 20 min. charges ..... | 228 | 5/9 |
| Machineman's Assistant... | Backing up after chargers, also attending to two fires below only; 5 hour 20 min. charges..... | 228 | 5/6 |
| | | *Fires.* | |
| Firemen ..... | Attending to ordinary fires, "fives," "sixes," or "sevens"..... | 9 | 5/6 |
| Ditto ..... | Attending regenerators, "sevens," "eights," or "nines," top and bottom, with clinkering..... | 6 | 5/6 |
| Ditto ..... | Attending regenerators, "sevens," "eights," or "nines," top or bottom only ..... | 12 | 5/6 |

| *Workmen.* | *Work.* | *Stint per Man. Based upon Saltley.* | *Rate of Wages. 8 hrs. per Day.* |
|---|---|---|---|
| Coke Wheelers .. | Wheeling coke to outside of Retort Houses through usual exits, to a maximum distance of about 20 yards, other men being engaged to take coke up mounds..... | 78 | 5/- |
| Ditto ..... | Ditto (No. 1 Retort House)..... | 96 | 5/- |
| Ditto ..... | From subways, firing side, with quenching, 75 mouthpieces, opposite side, with quenching 57, average..... | 66 | 5/- |
| Coke Runners Away ..... | Per 8 hour shift..... | .. | 5/- |
| Pullers-up ... | When mounds are extra steep, per 8 hour shift..... | .. | 4/- |
| Pipe Jumpers. | Per 8 hour shift..... | .. | 5/3 |
| Hot Retort Menders ... | Ditto Ordinary..... | .. | 4/6 |
| Ditto ..... | Ditto After machines..... | .. | 5/- |
| Scurfers ..... | Per 8 hour shift..... | .. | 4/6 |
| Lid Cleaners.. | Per 8 hour shift..... | .. | 4/6 |
| Coal Wheelers | Wheeling from truck..... | 102 | 5/- |
| Ditto ..... | Ditto from No. 1 Retort House..... | 121 | 5/- |
| Ditto ..... | Ditto from short stack..... | 83 | 5/- |
| Ditto ..... | Ditto from long stack..... | 69 | 5/- |
| Purifiers (day work) ..... | Per day of 9 hours (53 per week)..... Time and half to be paid to the firemen who come in on Sundays to get fires ready from 6 a. m. to 10 p. m. | .. | 4/9 |
| | *Windsor Street.* | | |
| | OLD HOUSES. | | |
| Stoker ..... | Retorts drawn and charged, patent lids, pipes to try..... | 30 | 5/6 |
| | | *Fires.* | |
| Fireman ..... | To come in on Sundays at 3 p. m. or 7 p. m., as required, to prepare fires after stoppage..... | 9 | 5/6 |
| | | *Mouthpieces.* | |
| Coke Wheeler. | One to every three stokers..... | 90 | 5/- |
| Coal Wheeler. | One to every six stokers..... | .. | 4/9 |
| | NEW HOUSE. | | |
| Stoker ..... | 20 ft. retorts charged only, patent lids.. | 52 | 5/6 |
| Ditto ..... | 22 ft. 3 in. retorts charged only, patent lids ..... | 48 | 5/6 |
| Machineman.. | Ross drawing machines, to open lids and draw all the retorts on 21 beds (one side), 6-hour work; two men to each machine, viz.: One at..... | .. | 5/9 |
| | And one at..... | .. | 5/6 |
| | Arrol-Foulis charging machine, hand geared. To charge all the retorts on 21 beds, one side, and close lids, 6-hour work. Two men to each machine, viz.: One at..... | .. | 5/9 |
| | And one at..... | .. | 5/6 |

| *Workmen.* | *Work.* | | *Rate of Wages. 8 hrs. per Day.* |
|---|---|---|---|
| Machineman— | Arrol-Foulis drawing and charging machines, hand geared. All charging and drawing on 14 beds, one side, 6-hour work, opening and closing lids, and all pipe jumping. Two men at..... | .. | 5/9 |
| | And one at..... | .. | 5/6 |
| | *Note.*—Machinemen to oil and clean, also assist in packing, changing rakes or chains, replacing broken wires, and light repairs to keep the work going. One fitter and laborer to be attached to each gang for repairs to machines. | | |
| Fireman ..... | Regenerative furnaces, coke, one generator to a setting..... | 6 | 5/6 |
| Ditto ..... | Ditto, breeze, two generators to a setting | 8 | 5/6 |
| | *Note.*—Firemen to come in on Sundays at 2 p. m. or 6 p. m., as required, to prepare furnaces after stoppage. Exhaust steam to be applied to all fires as far as this is available. | | |
| Cokewheeler.. | *No.* 1 *side.*—72 mouthpieces, wheeled 7 beds' length inside the house and 20 yards level run outside, or 15 yards up mound; or 62 mouthpieces, wheeled 7 beds' length inside the house and 20 yards up mound when not sufficient for a chain horse; or, 62 mouthpieces, wheeled through archway and tipped into boats or trucks. | | |
| Cokewheeler— | *No.* 2 *side.*—72 mouthpieces, wheeled and tipped into boats or trucks; or, 62 mouthpieces wheeled through archway across house and 15 yards up mound at nearest opening; or 62 mouthpieces, wheeled through archway from a distance of seven beds on either side of same and tipped to coke elevator; or, 62 mouthpieces, wheeled from No. 1 or A section, up platform at end of house, and tipped either into trucks outside or at end of platform. | | |
| | *Nos.* 3 *and* 4 *sides.*—Six cokewheelers to each section, or 56 mouthpieces per man, to wheel all coke and tip into boats or trucks. If there should not be sufficient boats or trucks for the draw, the remainder of the coke to be wheeled outside by the six men. | | |
| | If from No. 3 or F section, the coke has to be wheeled past the middle section and tipped into trucks, then seven cokewheelers to be employed on that section; or, seven cokewheelers to each section or 48 | | |

| *Workmen.* | *Work.* | *Stint per Man. Mouthpieces.* | *Rate of Wages. 8 hrs. per Day.* |
|---|---|---|---|
| | mouthpieces per man, to wheel all coke outside the house, or from No. 3 or F section, to the coke elevator. If seven men so start on a draw, they are to be kept on to finish the draw, whether or not all the coke has to be wheeled outside, on completion of which the seventh man may be withdrawn. In each case the distance outside for the coke to be wheeled is 20 yards on the level, or 15 yards up mound in front yard, or 30 yards up mound at end of retort house..... | .. | 5/- |
| Coke Wheeler | All cokewheelers to clean up the cellar opposite the retorts on which they are at work. All coke to be forked if required. Loading into boats, per boat load, 2s. 9d.; into railway wagons, inside or outside house, 2½d. per ton, or 6d. per ton for small or broken coke, all extra, and to be divided amongst the whole of the men employed on cokewheeling, according to the number of turns worked. | | |
| Pipe Jumper. | In gangs of three men, 36 beds..... | .. | 5/3 |
| Hot Retort Menders ... (after machines only) | To do any other work that may be required, maximum per 8-hour shift.. | .. | 5/- |
| Ditto ..... (ordinary) | Ditto ditto..... | .. | 4/6 |
| Lid Cleaners.. | Maximum ditto..... | .. | 4/6 |
| Coal Trimmers .. | ..... | 175 | 4/9 |
| Coal Unloaders... | Bottom door wagons, per wagon..... | .. | ... |
| | Side door wagons, per wagon..... | .. | ... |
| | Steel hopper wagons, per wagon..... Or to do any work at 6d. per hour. | .. | ... |
| Ditto ..... | Attending to Conveyor and Coal Hopper, per truck..... | .. | ... |
| | *Adderley Street.* | | |
| Stoker ..... | Drawing and charging retorts, patent lids, pipes to try..... | 27 | 5/6 |
| | | *Fires.* | |
| Fireman..... | To come in on Sundays at 3 p. m. or 7 p. m., as required, to prepare fires after stoppage..... Slow fires one-half the rate of ordinary fires. | 9 | 5/6 |

| *Workmen.* | *Work.* | *Mouthpieces.* | *Rate of Wages. 8 hrs. per Day.* |
|---|---|---|---|
| Coke Wheeler. | ..... | 78 | 5/- |
| Coal Wheeler. | One to every four stokers..... | 108 | 4/9 |
| Coal Trimmers .. | Per hour..... | .. | ... |
| Hot Retort Mender and Scurfer .... | ..... | .. | 4/6 |
| Purifiers ..... | Three men to empty and charge one purifier per day, lime or oxide, at 14/3 per purifier..... Minimum wage in the retort house, 4/- per 8-hour shift. | .. | 4/9 |

As far as possible there shall be no extra work, but odds and ends of work, or work that would otherwise be standing for want of an odd man, may be divided amongst the men on duty, and is to be paid for at a proportionate rate.

This to apply more particularly to night work, or between the hours of 6 P. M. and 6 A. M.

*All the Works.*

| | *Rate.* |
|---|---|
| Valveman, per 8 hour shift..... | 4/10 |
| Engineman, per 8 hour shift..... | 5/- |
| Boilerman, per 8 hour shift..... | 4/4 |
| Gateman, per 8 hour shift..... | 3/8 |
| Yardmen (ordinary), maximum per week..... | 23/- |
| Yardmen (handy), maximum per week..... | 27/- |
| Coke Loaders, per hour..... | 5½d. |
| Coal Crushers or Breakers or Elevators, per 8 hour shift.... | 4/6 |
| Coal Conveyor Attendants, per 8 hour shift..... | 4/6 |
| Locomotive Drivers, per day of 9 hours (53 per week)..... | 5/- |
| Locomotive Shunters, per day of 9 hours, maximum per day.. | 4/4 |
| Water Gas Makers, per 8 hour shift..... | 5/6 |
| Attendants, per 8 hour shift..... | 4/3 |
| Cold Retort Menders, per day of 9 hours..... | 4/6 |
| Flue Cleaners, per day of 9 hours..... | 4/6 |

Sunday work between the hours of 6 A. M. and 10 P. M. to be paid for at the rate of time and half.

During the months of May, June, July, August, and September carbonising work to be suspended on Sundays between 6. A. M. and 10 P. M., and also, as far as practicable, during the remainder of the year.

HOLIDAYS.

Carbonisers one day for the first four months' service, and one day for each succeeding two months. One week for not less than 10 months' continuous service, subject in each case as at present to forfeiture, either wholly or in part, for irregularity in attendance at work. The one day for two months to be forfeited in the event of one day's absence without leave.

Valve, gate, engine and boiler men, foreman purifier, and foreman coke loaders, one week's holidays per annum. All others,

subject to their having been employed continuously for three months previous to any such holiday, Christmas Day, Whit-Monday, and the first Monday in August, or one day for four months' continuous employment.

In the event of any grievance or alleged departure from the schedule, the men are required to make their complaint in the first instance to the ganger or foreman immediately in charge of the work. If not remedied, it may then be laid before the Superintendent or Engineer, and the men may, if they choose, be accompanied for this purpose by a deputation of their fellow-workmen.

The gangers or foremen will be instructed to report daily to the Engineers as to any and all complaints they may receive, and how such have been dealt with.

HENRY HACK,
CHARLES HUNT,
*Engineers.*

26th November, 1900.

**Corporation of Leicester.**

GAS AND ELECTRIC LIGHTING DEPARTMENT.

| | | *Rate of Pay.* | *Weekly Wage.* £ | *s.* | *d.* |
|---|---|---|---|---|---|
| Gas Works— | | | | | |
| 7 | Stokers' Foremen..... | 7/6 per day..... | 2 | 5 | 0 |
| 4 | Stokers' Foremen..... | 6/8 per day..... | 2 | 0 | 0 |
| 222 | Stokers ..... | 5/5 per day..... | 1 | 12 | 6 |
| 76 | Barrowers out of coke... | 5/- per day..... | 1 | 10 | 0 |
| 27 | Firemen ..... | 5/- per day..... | 1 | 10 | 0 |
| 25 | Laborers in retort house.. | 4/6 per day..... | 1 | 7 | 0 |
| 11 | Enginemen ..... | 5/- per day..... | 1 | 10 | 0 |
| 6 | Boilermen ..... | 6d. per hour..... | 1 | 7 | 0 |
| 100 | Coal and Cokemen..... | 6d. per hour..... | 1 | 7 | 0 |
| 3 | Coal and Cokemen's Foremen ..... | ..... | 1 | 15 | 0 |
| 126 | Yard Laborers..... | 6d. per hour..... | 1 | 7 | 0 |
| 2 | Yard Foremen..... | ..... | 1 | 15 | 0 |
| 1 | Yard Foreman..... | ..... | 2 | 2 | 0 |
| 1 | Carpenters' Foreman..... | 8/4 per day..... | 2 | 10 | 0 |
| 4 | Carpenters ..... | 9d., 8, 7½, 7d. per hour (7½ used) ..... | .. | .. | .. |
| 2 | Carpenters' Laborers..... | 6½d. per hour..... | 1 | 9 | 3 |
| 1 | Bricklayers' Foreman.... | 8/4 per day..... | 2 | 10 | 0 |
| 19 | Bricklayers ..... | 9d. per hour..... | 2 | 0 | 6 |
| 13 | Bricklayers' Laborers.... | 6½d. per hour..... | 1 | 9 | 3 |
| 1 | Painters' Foreman..... | 9d. per hour..... | 2 | 0 | 6 |
| 1 | Painter ..... | 8½d. per hour..... | 1 | 11 | 6 |
| 1 | Painters' Laborer..... | 7d. per hour..... | 1 | 11 | 6 |
| 2 | General Fitters' Foremen. | 8/8 per day..... | 2 | 12 | 0 |
| 16 | General Fitters..... | 1 at 8, 1 at 7½, 5 at 7, 9 at 6½ .. | .. | .. | .. |
| 18 | General Fitters' Laborers | 6d. per hour..... | 1 | 7 | 0 |
| 9 | Blacksmiths ..... | 1 at 9, 3 at 8, 5 at 7..... | .. | .. | .. |
| 1 | Purification Foreman.... | 6/8 per day..... | 2 | 0 | 0 |
| 24 | Purification Men ..... | Average ..... | 1 | 14 | 0 |
| 1 | Horse Keeper..... | 29/6 per week..... | 1 | 9 | 6 |
| 14 | Horse Keepers..... | 26/- per week..... | 1 | 6 | 0 |
| 9 | Metermen, repairing..... | 1 at 8, 1 at 7½, 1 at 7, 6 at 6d. .. | .. | .. | .. |
| .. | Pressure taking..... | 30/- per week..... | 1 | 10 | 0 |

| | | Rate of Pay. | Weekly Wage. £ | s. | d. |
|---|---|---|---|---|---|
| **Chemical Works—** | | | | | |
| 1 | Yard Foreman | 8d. per hour | 1 | 16 | 0 |
| 14 | Engine, Boiler and Saltmen | 7½d. per hour | 1 | 13 | 9 |
| 1 | Blacksmith | 7½d. per hour | 1 | 13 | 9 |
| 2 | Fitters | 8d. and 7d. per hour | .. | .. | .. |
| 22 | Laborers | 6d. per hour | 1 | 7 | 0 |
| **Water Gas Plant—** | | | | | |
| 1 | Foreman | 7/- per day | 2 | 2 | 0 |
| 4 | Laborers | 1 at 6½, 3 at 6d | .. | .. | .. |
| **Stove Department—Aylestone—** | | | | | |
| 1 | Foreman | 7/6 per day | 2 | 5 | 0 |
| 5 | Fitters and Cleaners | 7½d. per hour | 1 | 13 | 9 |
| 3 | Fitters and Cleaners | 7d. per hour | 1 | 11 | 6 |
| 14 | Fitters and Cleaners | 6½d. per hour | 1 | 9 | 3 |
| 4 | Laborers | 6d. per hour | 1 | 7 | 0 |
| **Stove Department—Town Offices—** | | | | | |
| 1 | Fitter Foreman | 9d. per hour | 2 | 0 | 6 |
| 6 | Fitters' Foremen | 8d. per hour | 1 | 16 | 0 |
| 5 | Fitters' Foremen | 7½d. per hour | 1 | 13 | 9 |
| 9 | Fitters' Foremen | 7d. per hour | 1 | 11 | 6 |
| 11 | Fitters' Foremen | 6½d. per hour | 1 | 9 | 3 |
| 4 | Fitters' Foremen | 17/6, 12/6, 12/6, 10/- | .. | .. | .. |
| **Mains and Services Department—** | | | | | |
| 1 | Mainlayer | 10d. per hour | 2 | 5 | 0 |
| 1 | Mainlayer | 9½d. per hour | 2 | 2 | 9 |
| 1 | General Fitter | 9½d. per hour | 2 | 2 | 9 |
| 12 | Mainlayers | 8d. per hour | 1 | 16 | 0 |
| 62 | Laborers | 6 at 7½, 15 at 7, 22 at 6½, 19 at 6d. | .. | .. | .. |
| .. | Inspectors | ..... | .. | .. | .. |
| 8 | Porters and Messengers | ..... | .. | .. | .. |
| **Fitting Department—** | | | | | |
| 4 | Fitters | 9d. per hour | 2 | 0 | 6 |
| 21 | Fitters | 8½d. per hour | 1 | 18 | 3 |
| 4 | Fitters | 8d. per hour | 1 | 16 | 0 |
| 3 | Fitters | 7½d. per hour | 1 | 13 | 9 |
| 17 | Fitters | 7d. per hour | 1 | 11 | 6 |
| 6 | Fitters | 6½d. per hour | 1 | 9 | 3 |
| 13 | Fitters | 20/- per week | 1 | 0 | 0 |
| 6 | Fitters | 17/6 per week | 0 | 17 | 6 |
| 20 | Fitters' Boys | Average, 10/- | 0 | 10 | 0 |
| 1 | Storekeeper | 35/- per week | 1 | 15 | 0 |

HOLIDAYS.

All foremen, stokers, barrowers-out, foremen, retort house men, engine drivers and boilermen, men employed at the Chemical Works and Electric Lighting Station and the time keepers and storekeepers, who have been employed for at least twelve months are allowed six days holiday each year for which they are paid.

Stokers, foremen and barrowers-out if at work on Christmas Day, Easterday and Whitsunday have double pay.

Each man not having the week's holiday has August Bank holiday or some other day allowed him for which he is paid.

**Newcastle-Upon-Tyne and Gateshead Gas Co.**

*Elswick Gas Works, Newcastle.*

| *Wage Workers.* | *Average Number for the Year.* | *Rate of Wages Per Hour, Day or Shift.* | *Extras.* |
|---|---|---|---|
| Enginemen— | | | |
| Exhausters | 3 | 5/9 per shift... | |
| Compressors | .. | ..... | |
| Firemen— | | | |
| Boilers | 3 | 5/5½ per shift... | |
| Scrubber Pumps— | | | 1/6 good |
| Attendants | 3 | 4/7 per shift... | time money. |
| Oil Gas— | | | |
| Makers | .. | ..... | |
| Assistants | .. | ..... | |
| Retort House— | | | |
| Stokers | 96 | 5/8½ per shift... | " |
| Firemen | 48 | 5/- per shift... | " |
| Pipe Burners | 2 | 4/10 per shift... | " |
| Hydraulic Main men | .. | ..... | |
| Retort Cleaners | 1 | 5/8½ per shift... | " |
| Retort Cleaners Assistants | 1 | 4/10 per shift... | " |
| Mouthpiece men | 1 | 4/9 per shift... | " |
| Coke Wheelers | 2 | 4/4 per shift... | " |
| Breeze Wheelers | .. | ..... | |
| Cannel Coal Wheelers | 1 | 4/4 per shift... | " |
| Coal Breakers | .. | ..... | |
| Sulphate of Ammonia— | | | |
| Makers | 1 | 5/8 per shift... | |
| Assistants | 1 | 5/2 per shift... | |
| Yardmen— | | | |
| Laborers | 59 | 6d. per h. (4½ to 6½) | |
| Loco. Enginemen | 1 | ½d. per ton tipped. | |
| Loco. Firemen | .. | ..... | |
| Fitters | 5 | 37/6 per week.... | usual. |
| Joiners | 3 | 39/6 per week.... | " |
| Bricklayers | 4 | 22/- per week.... | " |
| Masons | 1 | 39/9 per week.... | |
| Slaters | .. | ..... | |
| Plumbers | 1 | 24/- per week.... | |
| Blacksmiths | 5 | 31/1 per week.... | average. |
| Officials and others | 32 | | |
| | 274 | | |

*Redheugh Gas Works, Gateshead.*

| *Wage Workers.* | *Average Number for the Year.* | *Rate of Wages Per Hour, Day or Shift.* | *Extras.* |
|---|---|---|---|
| Enginemen— | | | |
| Exhausters | 8 | 5/9 per shift... | |
| Compressors | 3 | 5/7½ per shift... | |
| Firemen— | | | |
| Boilers | 8 | 5/5½ per shift... | |
| Scrubber Pumps— | | | 1/6 good |
| Attendants | 6 | 4/9 per shift... | time money. |
| Oil Gas— | | | |
| Makers | 2 | 5/6 per shift... | " |
| Assistants | 2 | 4/11 per shift... | " |

| *Wage Workers.* | *Average Number for the Year.* | *Rate of Wages Per Hour, Day or Shift.* | *Extras.* |
|---|---|---|---|
| Retort House— | | | |
| Stokers | 76 | 5/8½ per shift... | " |
| Firemen | 66 | 5/3 per shift... | " |
| Pipe Burners | 35 | 4/11½ per shift.. | " |
| Hydraulic Main men | 5 | 4/6 per shift... | " |
| Retort Cleaners | 3 | 5/8½ per shift... | " |
| Retort Cleaners Assistants | 3 | 5/3 per shift... | " |
| Mouthpiece men | 5 | 5/ ½ per shift... | " |
| Coke Wheelers | .. | ..... | |
| Breeze | 9 | 3/1½ per shift... | " |
| Cannel Coal Wheelers | .. | ..... | |
| Coal Breakers | 9 | 3/- per shift... | " |
| Sulphate of Ammonia— | | | |
| Makers | 2 | 5/8½ per shift... | |
| Assistants | 5 | 4/11½ per shift.. | |
| Yardmen— | | | |
| Laborers | 284 | 4/5 per day.... | |
| Loco. Enginemen | 3 | 5/8½ per day.... | |
| Loco. Firemen | 3 | 5/2½ per day.... | |
| Fitters | 8 | 6/- per day.... | |
| Joiners | 5 | 6/3 per day.... | |
| Bricklayers | 24 | 9½ per hour..... | |
| Masons | 1 | 9½ per hour..... | |
| Slaters | 1 | 6/3 per day.... | |
| Plumbers | 5 | 6/7 per day.... | |
| Blacksmiths | 6 | 6/- per day.... | |
| Officials and others | 39 | | |
| | 626 | | |

*Workshops, Forth Street, Newcastle.*

| *Wage Workers.* | *Average Number for Year.* | *Rate of Wages Per Hour, Day or Shift.* |
|---|---|---|
| Firemen | 10 | 44/- to 65/- per week. |
| Plumbers | 212 | 8½d. per hour. |
| Plumbers' Apprentices | 2 | 6/- to 18/- per week. |
| Tinsmiths | 25 | 35/- per week. |
| Tinsmiths' Apprentices | 3 | 6/- to 18/- per week. |
| Stove Repairers | 20 | 23/- per week. |
| Mantle Maintenance Attendants | 9 | 18/- to 20/- per week. |
| Blacksmiths | 1 | 36/- per week. |
| Blacksmiths' striker | 1 | 23/- per week. |
| Glaziers | 12 | 30/- per week. |
| Joiners | 3 | 35/6 per week. |
| Storekeepers | 2 | 30/- per week. |
| Inspectors | 4 | 44/- per week. |
| Complaint Men | 18 | 23/- to 28/- per week. |
| Syphon Men | 8 | 24/- to 26/- per week. |
| Boys (Plumbers' helps) | 105 | 8/- to 10/- per week. |
| Pipelayers | 9 | 26/- to 32/- per week. |
| Laborers | 130 | 23/- per week. |
| *Lamplighters | 146 | 22/- to 24/- per week. |
| Officials and others | 24 | |
| | 730 | |

* Light and extinguish lamps daily and clean lamps on beat once a week. Approximate hours per week, 32.

*Replies to Question No. 9 G.* Single time to 9 P. M. Time and quarter after 9 P. M. Time and half after 9 P. M. if working two or more nights in succession.

*Replies to Question No. 10 G.* Christmas Day, Good Friday and Saturday once a year for annual excursion.

HOURS FOR DAY AND WEEK.

| *Class.* | *Elswick Gas Works, Newcastle.* | | *Redheugh Gas Works, Gateshead.* | |
|---|---|---|---|---|
| | *Per Day. Hours.* | *Per Week. Hours.* | *Per Day. Hours.* | *Per Week. Hours.* |
| Enginemen— | | | | |
| (*a*) Exhausters | 8 | 56 | 8 | 56 |
| Compressors | .. | .. | 8 | 56 |
| Firemen— | | | | |
| (*b*) Boilers | 8 | 56 | 8 | 56 |
| * Scrubber Pumps— | | | | |
| (*c*) Attendants | 8 | 56 | 8 | 56 |
| * Oil Gas— | | | | |
| Makers | .. | .. | 8 | 56 |
| Assistants | .. | .. | 8 | 56 |
| *(*d*) Retort Houses— | | | | |
| Stokers | 8 | 56 | 8 | 56 |
| Firemen | 8 | 56 | 8 | 56 |
| Pipeburners | 8 | 56 | 8 | 56 |
| Hydraulic Mains Men.. | .. | .. | 8 | 56 |
| Retort Cleaners | 8 | 56 | 8 | 56 |
| Retort Cleaners' Assts. | 8 | 56 | 8 | 56 |
| Mouthpiece Men | 8 | 56 | 8 | 56 |
| Coke Wheelers | 8 | 56 | .. | .. |
| Breeze Wheelers | .. | .. | 8 | 56 |
| Cannel Coal Wheelers. | 8 | 56 | .. | .. |
| Coal Breakers | .. | .. | 8 | 56 |
| *(*e*) Sulphate of Ammonia— | | | | |
| Makers | 8 | 56 | 8 | 56 |
| Assistants | 8 | 56 | 8 | 56 |
| (*f*) Yardmen— | | | | |
| Laborers | 5¼ hrs. 1 day | | 5¼ hrs. 1 day | |
| Loco. Enginemen | 9½ hrs. 5 days | 53 | 9½ hrs. 5 days | 53 |
| Loco. Firemen | As required. | | | |
| Fitters | | | | |
| Joiners | | | | |
| Bricklayers | 5¼ hrs. 1 day | | 5¼ hrs. 1 day | |
| Masons | 9½ hrs. 5 days | 53 | 9½ hrs. 5 days | 53 |
| Slaters | | | | |
| Plumbers | | | | |
| Blacksmiths | | | | |

*Overtime*—Time and quarter till 9 P. M. (bricklayers 7 P. M.), and time and half till 6 A. M. next morning. Double time Sunday.

*Holidays*—(*a*), (*b*), (*c*), (*e*), one week per year.

(*d*) On graduated scale up to seven days, double time for Christmas Day and Good Friday.

(*f*) Public holidays (about six days per annum).

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* Time and half on morning and afternoon Sunday shifts.

**Sheffield United Gas Light Co.**

*Neepsend.*

| *Wage Workers.* | *Average Number for the Year.* | *Rate of Wages Per Hour. Day or Shift.* | *Extras.** |
|---|---|---|---|
| Erginemen— | | | |
| Exhausters—Engine men | 3 | 4/9 per shift... | |
| Compressors—Boiler men | 3 | 4/6 per shift... | |
| Firemen— | | | |
| Boilers—Boiler Firers... | 3 | 4/6 per shift... | |
| Scrubber Pumps— | | | |
| Attendants ..... | .. | ..... | |
| Oil Gas— | | | |
| Makers ..... | .. | ..... | |
| Assistants ..... | .. | ..... | |
| Retort House— | | | |
| Foremen and stokers.... | 3 | 48/- per week... | |
| Stokers ..... | 23 | 5/9 per shift... | |
| Firemen ..... | 16 | 5/3 per shift... | |
| Pipe burners..... | .. | ..... | |
| Hydraulic main men.... | 3 | 4/6 per shift... | |
| Retort cleaners..... Do assistants..... Mouthpiece men..... | 28 | 5/3 per shift... | |
| Coke wheelers..... Breeze wheelers..... | 48 | 4/9 per shift... | |
| Cannel Coal wheelers.... Coal breakers..... | 10 | 4/6 per shift... | |
| Sulphate of Ammonia— | | | |
| Makers ..... | .. | ..... | |
| Assistants ..... | .. | ..... | |
| Yardmen— | | | |
| Laborers and others..... | 272½ | 23/- to 26/- week. | |
| Locomotive enginemen.. | | | |
| Locomotive firemen..... | | | |
| Fitters, smiths, etc..... | 10 | 32/- to 36/- week. | |
| Joiners ..... | 2½ | 8½ and 8d. per hour | |
| Bricklayers ..... | | 9½d. per hour.... | |
| Masons ..... | 17½ | 9½d. per hour.... | |
| Slaters ..... | | 33/- per week... | |
| Plumbers ..... | 1 | 34/- per week... | |
| Blacksmiths ..... | 3 | 34/- to 36/- week. | |
| Officials and others..... | .. | ..... | |
| Total ..... | 446 | | |

*Effingham Street.*

| *Wage Workers.* | *Average Number for the Year.* | *Rate of Wages Per Hour. or Shift.* | *Extras.** |
|---|---|---|---|
| Enginemen— | | | |
| Exhausters—Engine tenders ..... | 3 | 4/9 per shift... | |
| Compressors—Shop engine | 1 | 23/- per week... | |
| Firemen— | | | |
| Boilers—Boiler Firers... | .. | ..... | |
| Scrubber Pumps— | | | |
| Attendants ..... | .. | ..... | |
| Oil Gas— | | | |
| Makers ..... | .. | ..... | |
| Assistants ..... | .. | ..... | |

* Overtime, paid at time and quarter; Sundays, time and half.

| *Wage Workers.* | *Average Number for the Year.* | *Rate of Wages Per Hour, Day or Shift.* | *Extras.* |
|---|---|---|---|
| Retort House— | | | |
| Foremen and stokers.... | 3 | 47/- per week... | |
| Stokers ..... | 27 | 5/9 per shift... | |
| Firemen ..... | 4 | 5/3 per shift... | |
| Pipe burners..... | .. | ..... | |
| Hydraulic main men and sweepers ..... | 3 | 3/- per shift... | |
| Retort cleaners..... | .. | ..... | |
| Do. assistants..... | .. | ..... | |
| Mouthpiece men..... | .. | ..... | |
| Coke wheelers..... | 10¾ | 4/3 per shift... | |
| Breeze wheelers..... | | | |
| Cannel Coal wheelers... | 3 | 3/- per shift... | |
| Coal breakers..... | | | |
| Sulphate of Ammonia— | | | |
| Makers ..... | .. | ..... | |
| Assistants ..... | .. | ..... | |
| Yardmen— | | | |
| Laborers and others..... | 58½ | 23/- per week... | |
| Locomotive enginemen.. | | | |
| Locomotive firemen..... | | | |
| Fitters, Smiths, etc..... | 3 | 34/- per week... | |
| Joiners ..... | ½ | 36/- per week... | |
| Bricklayers ..... | 1½ | ..... | |
| Masons ..... | | | |
| Slaters ..... | | | |
| Plumbers ..... | .. | ..... | |
| Blacksmiths ..... | .. | ..... | |
| Officials and others..... | .. | ..... | |
| Total ..... | 118 | | |

*Grimesthorpe.*

| *Class.* | *Average Number for the Year.* | *Rate of Wages Per Hour, Day or Shift.* | *Extras.** |
|---|---|---|---|
| Enginemen— | | | |
| (*a*) Exhausters—Engine .... | 3 | 4/9 per shift... | |
| Compressors ..... | .. | ..... | |
| Firemen— | | | |
| (*b*) Boilers—Firers ..... | 3 | 4/6 per shift... | |
| Scrubber Pumps— | | | |
| (*c*) Attendants ..... | .. | ..... | |
| Oil Gas— | | | |
| Makers ..... | .. | ..... | |
| Assistants ..... | .. | ..... | |
| (*d*) Retort Houses— | | | |
| Foremen Stokers..... | 3 | 47/- per week... | |
| Stokers ..... | 13¾ | 5/9 per shift... | |
| Firemen ..... | 8½ | 5/3 per shift... | |
| Pipeburners ..... | .. | ..... | |
| Hydraulic Mains men.... | 3 | 4/6 per shift... | |
| Retort Cleaners..... | 22 | 5/3 per shift... | |
| Do. Assistants..... | | | |
| Mouthpiece men..... | | | |
| Coke wheelers..... | 16 | 4/9 per shift... | |
| Breeze ..... | | | |
| Cannel Coal..... | 3 | 4/6 per shift... | |
| Coal Breakers..... | | | |

* Overtime, paid at time and quarter; Sundays, time and half.

| Class. | Average Number for the Year. | Rate of Wages Per Hour, Day or Shift. | Extras.* |
|---|---|---|---|
| (e) Sulphate of Ammonia— | | | |
| Makers | 3 | 5/- per shift... | |
| Assistants | 2 | 2/9 per shift... | |
| (f) Yardmen— | | | |
| Laborers and others | 158¾ | 23/- to 26/- week. | |
| Locomotive enginemen | 1 | 30/- per week... | |
| Locomotive firemen | 1 | 24/- per week... | |
| Fitters | 8½ | 32/- to 34/- week. | |
| Joiners | 1½ | 8½d. per hour.... | |
| Bricklayers | 3½ | 9½d. per hour.... | |
| Masons | | 9½d. per hour.... | |
| Slaters | | 33/- per week... | |
| Plumbers | 1 | 8½d per hour.... | |
| Blacksmiths | 3 | 33/- to 34/- week. | |
| Total | 258 | | |

FITTINGS AND PIPE LAYERS.

*Workshops.*

| Wage Workers. | Average Number for Year. | Rate of Wages Per Hour, Day or Shift.* |
|---|---|---|
| Foreman—Fitters | 2 | 1 at 48/- per week. 1 at 44/- per week. |
| Foremen—Brass | 1 | 52/- per week. |
| Fitters and Brass shop men | 86 | 24/- to 36/- per week. |
| Lads | 13 | 7/- to 19/- per week. |
| Foremen—Tinsmith | 1 | 52/- per week. |
| Tinsmith | 1 | 38/- per week. |
| Tinsmiths | 7 | 30/- to 34/- per week. |
| Painter and Glazier | 2 | 37/6 & 38/- per week. |
| Others | 10 | 24/- to 30/- per week. |
| Foreman—Stove | 1 | 36/- per week. |
| Stove repairers | 29 | 24/- per week. |
| Mantle Maintenance— | | |
| Foreman maintenance | 1 | 42/- per week. |
| Attendants | 26 | 24/- per week. |
| Blacksmiths | 2 | 36/- & 25/- per week. |
| Do. Strikers | 1 | 18/- per week. |
| Joiners | 1 | 38/- per week. |
| Storekeepers | 3 | 24/- to 30/- per week. |
| Complaintmen (see Fitters, above). | | |
| Syphon men | 2 | 30/- per week. |
| Boys (see above). | | |
| Foremen—Pipelayers | 2 | 52/- & 30/- per week. |
| Pipelayers | 11 | 26/- 28/- 30/- 36/- |
| Laborers | 47 | 23/- & 24/- per week. |
| Lamplighters | .. | Done by Corporation. |
| Officials and others | 18 | ..... |
| Foreman—Road repairer | 1 | 45/- per week. |
| Road repairers | 3 | 9d. & 7d. per hour. |
| Do. Laborers | 3 | 5½d. per hour. |
| Total | 274 | |

* Overtime, paid at time and quarter; Sundays, time and half.

**South Metropolitan Gas Co., London.**

OLD KENT ROAD STATION. 8 HOURS IN RETORT HOUSE.

| | *Number Employed.* | *Rate Per Day.* |
|---|---|---|
| Enginemen | 4 | 7/– |
| Enginemen | 4 | 6/6 d. |
| Boiler Firemen | 5 | 5/6 d. |
| Boiler Firemen | 4 | 5/3 d. |
| Scrubber Attendants | 1 | 7/3 d. |
| Scrubber Attendants | 4 | 6/6 d. |
| Retort House— | | |
| Stokers | 50 | 6/– |
| Firemen | 16 | 6/2 d. |
| Pipeburners | 11 | 5/7 d. |
| | | *Per Hour.* |
| Hydraulic Mains men | 1 | 7 d. |
| | 1 | 7½d. |
| | | *Per Day.* |
| Coal Breakers | 4 | 5/6 d. |
| Sulphate— | | |
| Makers | 2 | 7/– |
| Makers | 2 | 6/– |
| | | *Per Hour.* |
| Laborers | 11 | 7 d. |
| Laborers | 9 | 6¾d. |
| Laborers | 230 | 6½d. |
| Laborers | 4 | 6½d. |
| Laborers | 89 | 6 d. |
| Locomotive Enginemen | 1 | 8½d. |
| Locomotive Enginemen | 1 | 8 d. |
| Locomotive Firemen | 1 | 6¾d. |
| Locomotive Firemen | 1 | 6½d. |
| Fitters | 1 | 11 d. |
| Fitters | 1 | 10½d. |
| Fitters | 1 | 10½d. |
| Fitters | 1 | 10 d. |
| Fitters | 1 | 9½d. |
| Fitters | 10 | 9 d. |
| Fitters | 3 | 8¾d. |
| Fitters | 6 | 8½d. |
| Fitters | 8 | 8 d. |
| Fitters | 5 | 7¾d. |
| Fitters | 11 | 7½d. |
| Fitters | 2 | 7½d. |
| Fitters | 18 | 7 d. |
| Joiners | 1 | 10½d. |
| Joiners | 10 | 10 d. |
| Joiners | 2 | 9½d. |
| Slaters | 1 | 8 d. |
| Slaters | 1 | 7 d. |
| Bricklayers | 19 | 9½d. |
| Bricklayers | 6 | 9 d. |
| Bricklayers | 1 | 8½d. |
| Bricklayers | 3 | 8 d. |
| Plumbers | 1 | 10 d. |
| Blacksmiths | 1 | 10 d. |
| Blacksmiths | 1 | 9½d. |
| Blacksmiths | 7 | 9 d. |
| Blacksmiths | 1 | 8½d. |

| | *Number Employed.* | *Rate Per Day.* |
|---|---|---|
| Blacksmiths | 1 | 8 d. |
| Blacksmiths | 4 | 7½d. |
| Strikers | 10 | 6½d. |
| Strikers | 1 | 6¾d. |
| Strikers | 3 | 6 d. |
| Tinsmiths | 2 | 9 d. |
| Tinsmiths | 1 | 8 d. |
| Tinsmiths | 1 | 7½d. |
| Stove Repairers | Piece Work. | |
| | | *Per Week.* |
| Mantle Maintenance | 21 | 27/6 d. |
| Mantle Maintenance | 3 | 26/– |
| Mantle Maintenance | 8 | 25/– |
| Mantle Maintenance | 4 | 24/– |
| Mantle Maintenance | 4 | 23/– |
| Mantle Maintenance | 3 | 22/– |
| Mantle Maintenance | 2 | 21/– |
| Mantle Maintenance | 3 | 20/– |
| Mantle Maintenance | 1 | 19/– |
| Painters and Glaziers | Piece Work. | |
| Storekeepers | 2 | 50/– |
| Storekeepers | 1 | 42/– |
| Storekeepers | 3 | 40/– |
| Storekeepers | 6 | 35/– |
| Storekeepers | 1 | 32/6 d. |
| Storekeepers | 3 | 30/– |
| | | *Per Hour.* |
| Complaint Men | 11 | 7½d. |
| Complaint Men | 3 | 7¼d. |
| Complaint Men | 1 | 7 d. |
| Syphon Men | 5 | 7¾d. |
| Pipe Layers | 4 | 8½d. |
| Pipe Layers | 8 | 8 d. |
| Pipe Layers | 16 | 7½d. |
| Pipe Layers | 2 | 7¼d. |
| Pipe Layers | 28 | 7 d. |
| Laborers (District) | 23 | 6¾d. |
| | | *Per Week.* |
| Lamplighters | 181 | 27/6 d. |
| Lamplighters | 25 | 26/6 d. |
| Foremen | 1 | 90/– |
| Foremen | 1 | 80/– |
| Foremen | 2 | 75/– |
| Foremen | 1 | 72/6 d. |
| Foremen | 6 | 70/– |
| Foremen | 5 | 65/– |
| Foremen | 1 | 63/– |
| Foremen | 1 | 62/6 d. |
| Foremen | 2 | 60/– |
| Foremen | 4 | 58/6 d. |
| Foremen | 2 | 57/6 d. |
| Foremen | 7 | 55/– |
| Foremen | 2 | 52/6 d. |
| Foremen | 5 | 50/– |

**Manchester—Electric Lighting and Supply.**

| *Occupation.* | *Number Employed at Each Rate of Pay.* | *Hours Per Week.* | ‡ *Rate of Wages.* |
|---|---|---|---|
| | | | *Per Annum.* |
| *Resident Engineers..... | 2 | .... | £280 and £350 |
| *Engineers in Charge..... | 9 | .... | 150 to 175 |
| *District Engineers..... | 3 | .... | 175 to 350 |
| *Assistant Engineers..... | 2 | .... | 163.16.0 to £250 |
| *Mechanical Assistants.... | 1 | .... | 255 |
| | | | *Per Week.* |
| †Foremen ..... | 17 | .... | 47/– to 63/– |
| †Drivers and Greasers..... | 46 | 48 to 56 | 19/– to 45/– |
| †Firemen (Stokers)..... | 18 | 48 to 56 | 34/– to 42/– |
| †Coal Trimmers..... | 12 | 48 to 56 | 25/– to 29/– |
| †Cooling Tower Attendants | 3 | 56 | 30/– |
| †Crane Drivers..... | 7 | 55 and 56 | 30/– and 32/– |
| †Boiler and Economiser Cleaners ..... | 15 | 53 and 56 | 25/– |
| †Pump Attendants..... | 3 | 55 and 56 | 25/– and 26/– |
| †Laborers ..... | 85 | 53 to 56 | 25/– to 26/6 |
| †Switchboard Attendants.. | 12 | 52 to 56 | 30/– to 45/– |
| †Dynamo Attendants..... | 8 | 53 to 56 | 21/– to 30/– |
| †Juniors ..... | 10 | 52 to 56 | 10/– to 17/– |
| †Sub-station Attendants and Assistants ..... | 95 | 56 | 25/– to 45/– |
| †Office Cleaners (women)... | 5 | 24½ | 12/– to 15/– |
| †Meter Readers..... | 9 | 41½ | 20/– to 35/– |
| †Inspectors ..... | 19 | 43½ to 56 | 25/– to 57/8 |
| | | | *Per Hour.* |
| †Wiremen ..... | 11 | 53 | 8½d. to 9½d. |
| †Jointers and Assistants.. | 26 | 52½ | 4½d. to 9d. |
| †Meter and Motor Fixers and Assistants..... | 13 | 52½ | 3½d. to 8½d. |
| †Lamp Trimmers..... | 5 | 53 and 56 | 5d. to 7d. |
| | | | *Per Week.* |
| †Mechanics ..... | 5 | 53 | 34/– to 42/– |
| †Fitters ..... | 25 | 53 | 38/– to 40/– |
| †Turners ..... | 4 | 53 | 38/– |
| | | | *Per Hour.* |
| †Painters ..... | 5 | 53 | 8½d. to 9½d. |
| †Concretors ..... | 2 | 52½ | 8½d. |
| †Bricklayers ..... | 5 | 52½ | 10d. |
| †Blacksmiths ..... | 3 | 53 | 36/– and 38/– per wk. |
| †Joiners ..... | 9 | 53 | 9½d. per hour |
| †Improvers ..... | 6 | 53 | 9/– to £1.8.9 per week |
| †Laborers and Gangers.... | 165 | 52½ | 3½d. to 9d. per hour |
| | | | *Per Week.* |
| †Motor Car Attendant..... | 1 | 53 | 36/– |
| †Watchman ..... | 9 | 7 Shifts | 24/6 to 30/– |
| †Storemen ..... | 9 | 52½ to 56 | 18/– per wk. to £150 per ann. |
| †Timekeepers and Gate-keepers ..... | 4 | 52½ to 56 | 30/– to 40/– |
| †Head of Testing Dept.... | 1 | 43½ | £215 per annum |
| †Do. Assistants..... | 15 | 43½ | 7/– to 38/– per week |

* Two weeks' holiday with pay.
† Holidays, from four days to a fortnight with pay.
‡ From single to double time for overtime.
NOTE.—Bonus allowed to boiler house staffs for coal saving.

**Liverpool Corporation Electric Supply Dept.**

| *Occupation.* | *Number Employed.* | *Hours Per Week.* | *Rate of Wages.* |
|---|---|---|---|
| *Station Engineers | 5 | .. | £130 per annum<br>165 per annum<br>200 per annum |
| *Mains Superintendent | 1 | .. | 275 per annum |
| *Mains Engineer | 1 | .. | 250 per annum |
| *Assistant Engineers | 2 | .. | £275 & £300 per anm. |
| Mechanical Assistants | .. | .. | ..... |
| †*a* Engine Drivers and Greasers | 42 | 56 | 6½d. to 9d. per hour |
| †Firemen | 67 | 56 | 6½d. to 7½d. per hour |
| †Coal Trimmers | 10 | 56 | 5½d. to 6d. per hour |
| †Watermen | .. | .. | ..... |
| †*b* Ash Hoisters | .. | .. | ..... |
| †*c* Boiler Cleaners | 12 | 59 | 4d. to 5d. per hour |
| †Pump Attendants on Condensing Plant | 8 | 56 | 7½d. to 9d. per hour |
| †Laborers | 48 | 53 | 5½d. to 8d. per hour |
| †Switchboard | 9 | 56 | 5d. to 8d. per hour |
| †Juniors | .. | .. | ..... |
| Inspectors | .. | .. | ..... |
| *Meter Readers | 3 | 39 | 27/– to 32/– per week |
| †Wiremen on Installation and Station Work | 30 | 52 | 5½d. to 10½d. per hour |
| †Jointers | 4 | 60 | 6½d. to 8d. per hour |
| †Cable Layers | 6 | 60 | 5½d. per hour |
| Fusemen | .. | .. | ..... |
| Lamp Trimmers | .. | .. | ..... |
| Mechanics | .. | .. | ..... |
| †Fitters | 19 | 53 | 8d. to 10d. per hour |
| †Turners | 3 | 53 | 8½d. to 9½d. per hour |
| Plumbers | .. | .. | ..... |
| †Bricklayers | 1 | 53 | 9½d. per hour |
| Blacksmith | .. | .. | ..... |
| Improvers | .. | .. | ..... |
| Laborers and Gangers on Underground Mains | 64 | 60 | 4d. to 5½d. per hour |
| Watchmen | 3 | 84 | 4d. per hour |
| †Storemen | 2 | 60 | 6½d. & 7½d. per hour |
| Storekeeper | 1 | .. | £100 per annum |
| Gate Keepers | .. | .. | ..... |

* Holidays with pay (after twelve months' service), two weeks.

† Holidays with pay (after twelve months' service), one week.

*a* Extras, overtime, bonus, etc., 3d. per shift for leading hands.

*b* Included as firemen or coal trimmers.

*c* In summer time, when number of boilers are less than in winter, the foremen are employed on boiler cleaning at their ordinary rates of pay so that they may be available for service as firemen again during the winter.

**Glasgow Corporation Electricity Department.**

| *Occupation.* | *Number Employed.* | *Rate of Wages.* | *Hours or Shifts Per Week.* | *Holidays With Pay.* |
|---|---|---|---|---|
| Engineers in Charge... | 2 | 1 at £234 per an.<br>1 at 208 per an. | Undefined | 21 days |
| District Engineers..... | 3 | 1 at 234 per an.<br>2 at 221 per an. | Undefined | 21 days |
| Assistant Engineers.... | 3 | 1 at 75/- week<br>1 at 72/6 week<br>1 at 65/- week | Undefined | 21 days |
| Mechanical Assistants.. | 2 | 35/- week | 54 | 14 days |
| Fitter, Drivers, Greasers ..... | 12 | 27/- to 35/- week | 7 shifts | 14 days |
| Firemen ..... | 17 | 23/- to 29/- week | 7 shifts | 14 days |
| Coal Trimmers..... | 11 | 23/- week | 7 shifts | 14 days |
| Watermen ..... | .. | ..... | .... | ..... |
| Ash Hoisters..... | .. | ..... | .... | ..... |
| Boiler Cleaners (classed as Laborers)..... | .. | ..... | .... | ..... |
| Pump Attendants..... | .. | ..... | .... | ..... |
| *Laborers ..... | 407 | 5d. hour | 54 | 5 days |
| Switchboard Attendants | 39 | 18/- to 65/- week | Undefined | 21 days |
| Draughtsmen ..... | 9 | 20/- to 75/- week | 39 | 14 days |
| Clerks ..... | 52 | 18 at 35/- to £3<br>34 at 12/6 to 35/- | 39 | 14 days |
| Messengers ..... | 4 | 27/- to 32/- week | Varying | 14 days |
| Laboratory Assistants.. | 7 | 18/- to 40/- week | 39 | 14 days |
| *Cranemen ..... | 3 | 5d. to 6½d. hour | 54 | ..... |
| *Coppersmiths ..... | 4 | 8d. to 8½d. hour | 54 | ..... |
| *Plasterers ..... | 10 | 9½d. hour | 54 | ..... |
| *Masons ..... | 9 | 8½d. to 9½d. hour | 54 | ..... |
| *Joiners ..... | 18 | 9½d. hour | 54 | ..... |
| *Painters ..... | 9 | 6d. to 8d. hour | 54 | ..... |
| *Instrument Repairers. | 7 | 7d. to 8d. hour | 54 | ..... |
| Bench Hands..... | 9 | 5½d. to 6¾d. hour | 54 | ..... |
| Inspectors Meter Readers ..... | 17 | £70 to £110 annum | 39 | 14 days |
| *Wiremen ..... | 45 | 6d. to 9d. hour | 54 | ..... |
| *Wiremen's Mates..... | 16 | 5d. to 6d. hour | 54 | ..... |
| *Jointers ..... | 18 | 8d. to 9½d. hour | 54 | ..... |
| *Jointers' Mates..... | 19 | 5½d. hour | 54 | ..... |
| Conduit Layers (classed as Laborers)..... | .. | ..... | .... | ..... |
| Fusement (Emergency) | 13 | 23/- to 30/- week | 7 shifts | 14 days |
| Arc Lamp Trimmers... | 11 | 25/- to 27/- week | Varying | 14 days |
| Arc Lamp Trimmers (Mates) ..... | 12 | 21/5 week | Varying | 14 days |
| *Mechanics ..... | 1 | 9d. hour | 54 | ..... |
| *Fitters ..... | 21 | 6d. to 10d. hour | 54 | ..... |
| *Turners ..... | 2 | 7¾d. to 8¼d. hour | 54 | ..... |
| *Plumbers ..... | 1 | 6¼d. hour | 54 | ..... |
| *Bricklayers ..... | 63 | 9½d. to 10d. hour | 54 | ..... |
| *Blacksmith ..... | 4 | 8d. to 9d. hour | 54 | ..... |
| Improvers ..... | .. | ..... | .... | ..... |
| Foreman Squad, Laborers and Gangers... | 11 | 6½d. to 35/- per week | 54 | ..... |
| Watchmen (Outside).. | 57 | 3/5 per shift | Varying | ..... |
| Watchmen (Inside).... | 17 | 24/- to 3/5 | 7 shifts | ..... |
| Storemen ..... | 5 | 40/- week | 54 | 14 days |
| Gate Keepers..... | .. | ..... | .... | ..... |
| *Timekeepers ..... | 14 | 20/- to 32/- week | 54 | ..... |

*** Extras, overtime, time and a half.**

**Newcastle-Upon-Tyne Electric Supply Company Limited.**

(At Carville and Gateshead.)

| *Occupation.* | *Number Employed at Each Rate of Pay.* | *Hours Per Week.* | *Rate of Pay Per Week.* | *Holidays With Pay.* |
|---|---|---|---|---|
| *Engineers in Charge..... | 9 | 56 | £104 to £190 | 14 days |
| *District Engineers..... | 8 | †.. | 104 to 139 | 14 days |
| *Assistant Engineers..... | 7 | †.. | 65 to 91 | 14 days |
| Mechanical Assistants.... | 3 | 56 | £2. 5.0 to £2.10.0 | 14 days |
| Fitters Drivers..... | 8 | 56 | 1.17.0 to 2. 2.0 | 14 days |
| Greasers ..... | 14 | 56 | 18.0 to 1.13.0 | 10 days |
| Firemen ..... | 24 | 56 | 1.10.4 to 1.16.0 | 10 days |
| Coal Trimmers, included as Firemen..... | .. | .. | ..... | ..... |
| Watermen ..... | 3 | 56 | 1.13.0 | 10 days |
| Ash Hoisters..... | 7 | 56 | 1. 8.0 to 1.13.0 | 10 days |
| Boiler Cleaners..... | 5 | 53 | 14.6 to 1. 9.0 | 10 days |
| Pump Attendants..... | 3 | 56 | 1.10.4 | 10 days |
| Laborers ..... | 21 | 53 | 12.0 to 1.10.0 | 10 days |
| Switchboard (permanent switchmen) ..... | 4 | 56 | 1.10.0 to 2. 0.0 | 14 days |
| Switchboard (temporary switchmen) ..... | 8 | ‡.. | 2.0 to 2.6 | ..... |
| Juniors ..... | 90 | 56 | 10.0 to 25.0 | 14 days |
| Shunter ..... | 1 | §.. | 1. 6.6 | 10 days |
| Inspectors ..... | 1 | 39 | 156 per annum = 60/ per week | 14 days |
| Meter Readers..... | 5 | 53 | 25.0 | 1 week |
| Wiremen ..... | .. | .. | ..... | ..... |
| Jointers ..... | 3 | §.. | 33.0 to 35.0 | ..... |
| ‖Conduit Layers..... | .. | .. | ..... | ..... |
| Fusemen ..... | 4 | 56 | 1. 0.0 to 1.18.0 | 10 days |
| Lamp Trimmers..... | 5 | 56 | 6.0 to 1.17.0 | ..... |
| ‖Mechanes ..... | .. | .. | ..... | ..... |
| ‖Fitters ..... | .. | .. | ..... | ..... |
| ‖Turners ..... | .. | .. | ..... | ..... |
| ‖Plumbers ..... | .. | .. | ..... | ..... |
| ‖Bricklayers ..... | .. | .. | ..... | ..... |
| ‖Blacksmith ..... | .. | .. | ..... | ..... |
| ‖Improvers ..... | .. | .. | ..... | ..... |
| Laborers and Gangers.... | 3 | 53 | 1. 6.0 to 1. 7.0 | ..... |
| ‖Watchmen ..... | .. | .. | ..... | ..... |
| ‖Storemen ..... | .. | .. | ..... | ..... |
| Gatekeepers ..... | 3 | 56 | £1.10.0 | ..... |
| Telephone Engineer..... | 1 | 39 | 2. 7.6 | 14 days |
| Mains Engineer..... | 1 | ‡39 | 2.15.0 | 14 days |
| Telephone Operators..... | 4 | 56 | 1. 5.0 | 14 days |
| Chemist ..... | 1 | 39 | 3. 0.0 | 14 days |

* Per annum; paid monthly.

† Special, liable to be called at any time.

‡ Special.

§ Special; usually 53.

‖ Any special work that is to be done for Operation Department, Jointers, etc., are loaned to them by Construction Department.

**London—The Central Electric Supply Company, Limited.**

LOW & MERRILL.

| *Occupation.* | *Number Employed at Each Rate of Pay.* | *Hours Per Week.* | *Rate of Wages Per Day, Hour, or Shift.* | *Holidays With Pay.* |
|---|---|---|---|---|
| Engineers in Charge..... | 2 | .. | £325 | ..... |
| District Engineers..... | .. | .. | .... | ..... |
| Assistant Engineers..... | 3 | .. | 1 at £135<br>1 at 140<br>1 at 100 | ..... |
| Mechanical Assistants..... | .. | .. | .... | ..... |
| *Fitter, Drivers, Greasers... | 4 | 54 | 2 at 40/-<br>1 at 34/-<br>1 at 32/- | 54 hours |
| *Firemen ..... | 14 | 54 | 4 at 34/-<br>8 at 32/-<br>2 at 40/- | 54 hours |
| *Coal Trimmers..... | 5 | 54 | 1 at 7d.<br>4 at 6½d. | 54 hours |
| Watermen ..... | .. | .. | .... | ..... |
| Ash Hoisters..... | .. | .. | .... | ..... |
| Boiler Cleaners..... | .. | .. | .... | ..... |
| Pump Attendants..... | .. | .. | .... | ..... |
| *Engine Room Laborers.... | 12 | 54 | Average 6d. | 54 hours |
| *Switchboard ..... | 3 | 54 | 1 at 38/-<br>1 at 34/-<br>1 at 8d. | 54 hours |
| Juniors ..... | .. | .. | .... | ..... |
| Inspectors ..... | .. | .. | .... | ..... |
| Meter Readers..... | .. | .. | .... | ..... |
| *Wiremen ..... | 1 | 54 | 8d. | 54 hours |
| Jointers ..... | .. | .. | .... | ..... |
| Conduit Layers..... | .. | .. | .... | ..... |
| Fusemen ..... | .. | .. | .... | ..... |
| Lamp Trimmers..... | .. | .. | .... | ..... |
| Mechanics ..... | .. | .. | .... | ..... |
| *Fitters ..... | 4 | 54 | †1 at 60/-<br>1 at 9½d.<br>1 at 9d.<br>1 at 8½d. | 54 hours |
| Turners ..... | .. | .. | .... | ..... |
| Plumbers ..... | .. | .. | .... | ..... |
| *Bricklayers ..... | 1 | 54 | 10½d. | 54 hours |
| *Blacksmith ..... | 1 | 54 | 8½d. | 54 hours |
| *Improvers ..... | 1 | .. | 30/- | 54 hours |
| *Construction Laborers and Gangers ..... | 9 | 54 | Average 7d. | 54 hours |
| *Watchmen ..... | 3 | ? | 30/- | 54 hours |
| *Storemen ..... | 1 | 54 | ♦30/- | 54 hours |
| Gate Keepers..... | .. | .. | .... | ..... |
| *Tank House..... | 1 | 54 | 7d. | 54 hours |
| *Boys ..... | 2 | 54 | 4d. | 54 hours |

* Extras, overtime, bonus, etc., time and quarter overtime.

† Foreman.

N. B.–This company does not distribute, but supplies in bulk to the St. James' & Pall Mall Electric Light Co., Ltd., and the Westminster Electric Supply Corporation, Ltd.

**St. James & Pall Mall Electric Light Company, Limited.**

| *Occupation.* | *Number Employed at Each Rate of Pay.* | *Hours Per Week.* | *Rate of Wages Per Day, Hour, or Shift.* | *Holidays With Pay.* |
|---|---|---|---|---|
| Engineers in Charge..... | 2 | .. | 1 at £200<br>1 at 150 | ..... |
| Arc Lamp Attendant..... | 1 | 54 | 50/- | ..... |
| District Engineers..... | .. | .. | .... | ..... |
| Assistant Engineers..... | 3 | .. | 1 at £2<br>1 at 35/-<br>1 at 30/- | ..... |
| Mechanical Assistants..... | .. | .. | .... | ..... |
| *Fitter, Drivers, Greasers... | 5 | 54 | 1 at 45/-<br>2 at 35/-<br>2 at 32/- | 1 week |
| *Firemen ..... | 14 | 54 | 1 at 40/-<br>1 at 37/6<br>4 at 34/-<br>8 at 32/- | 1 week |
| *Coal Trimmers..... | 3 | 54 | 6½d. hour | 1 week |
| *Engine Room Cleaners..... | 8 | 54 | Average 5d. hour | 1 week |
| *Ash Hoisters..... | 1 | 54 | 8d. | 1 week |
| *Boiler Cleaners..... | 2 | 54 | 6½d. | 1 week |
| Clock Makers..... | 4 | 54 | 1 at 32/6<br>3 at 30/- | 1 week |
| Pump Attendants..... | .. | .. | .... | ..... |
| Tank House..... | 2 | 54 | 1 at 7d.<br>1 at 6½d. | ..... |
| Laborers ..... | .. | .. | .... | ..... |
| *Switchboard ..... | 5 | 54 | 1 at 40/-<br>1 at 38/-<br>3 at 35/- | 1 week |
| Juniors ..... | .. | .. | .... | ..... |
| *Boiler Makers, etc..... | 5 | 54 | 1 at 11d.<br>1 at 10d.<br>1 at 8d.<br>2 at 7½d. | 1 week |
| *Inspectors ..... | 3 | 54 | †1 at 60/-<br>1 at 45/-<br>1 at 37/6 | 54 hours |
| *Meter Readers..... | 5 | 54 | 4 at 30/-<br>1 at 25/- | 54 hours |
| *Wiremen ..... | 6 | 54 | †1 at 60/-<br>1 at 10d.<br>2 at 9½d.<br>1 at 9d.<br>1 at 4½d. | 54 hours |
| *Jointers ..... | 7 | 54 | †1 at 65/-<br>1 at 10d.<br>2 at 9d.<br>3 at 8d. | 54 hours |
| Conduit Layers..... | .. | .. | .... | ..... |
| Fusemen ..... | .. | .. | .... | ..... |
| *Pipe Layer..... | 1 | 54 | 7d. | 54 hours |
| *Lamp Trimmers..... | 5 | 54 | 3 at 7d.<br>2 at 6d. | 54 hours |

* Extras, overtime, bonus, etc., time and quarter overtime.
† Foreman.

| *Occupation.* | *Number Employed at Each Rate of Pay.* | *Hours Per Week.* | *Rate of Wages Per Day, Hour, or Shift.* | *Holidays With Pay.* |
|---|---|---|---|---|
| Mechanics | .. | .. | .... | ..... |
| *Fitters | 7 | 54 | †1 at 60/–<br>1 at 10d.<br>2 at 9½d.<br>1 at 8½d.<br>1 at 8d.<br>1 at 6d. | 54 hours |
| *Turners | 2 | 54 | 1 at 50/–<br>1 at 9½d. | 54 hours |
| Plumbers | .. | .. | .... | ..... |
| *Bricklayers | 2 | 54 | 1 at 9½d.<br>1 at 10½d. | 54 hours |
| *Blacksmith | 1 | 54 | 1 at 10d. | 54 hours |
| *Construction Dept. Laborers | 6 | 54 | 3 at 7½d.<br>3 at 7d. | 54 hours |
| Mains Laborers and Gangers | 8 | 54 | 2 at 7d.<br>4 at 6½d.<br>2 at 6d. | ..... |
| Watchmen | 2 | ? | 30/– | ..... |
| Storemen | 1 | 54 | 35/– | ..... |
| *Boys | 5 | 54 | 2 at 15/–<br>1 at 8/–<br>1 at 4d.<br>1 at 3d. | 54 hours |
| Gatekeepers | .. | .. | .... | ..... |
| *Carpenters | 4 | 54 | 2 at 10½d.<br>1 at 11d.<br>1 at 10d. | 54 hours |

* Extras, overtime, bonus, etc., time and quarter overtime.

† Foreman.

City of London Company, Ltd.

| Occupation. | Number Employed. | Hours per Week. | Rate of Pay per Day or Shift. | Wages per Hour. | Extras, Overtime, Bonus, Etc. | Holidays With Pay. |
|---|---|---|---|---|---|---|
| * Engineers in Charge..... | | | | | | |
| * District Engineers..... | | | | | | |
| * Assistant Engineers..... | | | | | | |
| * Mechanical Assistants..... | | | | | | |
| Fitters, Drivers, Greasers and Cleaners ..... | 64 | 56 | ..... | 10d. to 5d. | Bonus on cost results up to 10% of wage..... | 1 week and bank holidays. |
| Firemen ..... | 38 | 56 | ..... | 10d. to 6½d. | Bonus on cost results up to 10% of wage..... | 1 week and bank holidays. |
| Coal Trimmers..... | 8 | 56 | ..... | 9d. to 6½d. | Time and quarter for overtime and time and half for Sundays; bonus on cost..... | ..... |
| Watermen ..... | 9 | 56 | ..... | 7d. to 3d. | Bonus on cost.... | 1 week and bank holidays. |
| Ash Hoisters..... | .. | .. | ..... | ..... | ..... | ..... |
| Boiler Cleaners..... | 12 | 60 | ..... | 9d to 6½d. | (a) | ..... |
| Pump Attendants..... | 3 | 56 | 50/- per wk. | to 8d. per hr. | Bonus on cost.... | 1 or 2 weeks and bank holidays. |
| Laborers ..... | .. | .. | ..... | ..... | ..... | ..... |
| Switchboard ..... | 12 | 56 | ..... | 9½d. to 6d. | Bonus on cost.... | 1 week and bank holidays. |

For Notes relating to this table, see page 612.

| *Occupation.* | *Number Employed.* | *Hours per Week.* | *Rate of Pay per Day or Shift.* | *Wages per Hour.* | *Extras, Overtime, Bonus, Etc.* | *Holidays With Pay.* |
|---|---|---|---|---|---|---|
| Juniors | 8 | 56 | ..... | 3½d. to 3d. | Bonus on cost.... | 1 week and bank holidays. |
| Inspectors<br>Meter Readers | 18 | 53½ | 52/6 per wk. to 5d per hr. | | ..... | 2 weeks to nil. |
| Wiremen | 42 | 53½ | 40/- per wk. to 5½d. per hr. | (*b*) | | 1 week to nil. |
| Wiremens' Mates (Assistants) | 28 | 53½ | ..... | 4d. to 3d. (*b*) | | ..... |
| Jointers | 11 | 53½ | 45/- per wk. to 7½d. per hr. | | (*b*) | 1 week to nil. |
| Gatekeepers, Timekeepers, Office Cleaners and Attendants | 13 fm. | 56 | 35/- to 10/- per week.. | ..... | ..... | 1 week and bank holidays to nil. |
| Box Examiners | 12 | 53½ | 35/- per wk. to 5d. per hr. | | (*b*) | ..... |
| Box Examiners' Mates (Assistants) | 16 | 53½ | ..... | 4½d. to 3d. | (*b*) | ..... |
| Lamp Repairers | 4 | 53 | ..... | 8½d. to 5d. | (*b*) | ..... |
| Lantern Repairers | 1 | 53 | ..... | 7d. | (*b*) | ..... |
| Carpenters | 4 | 54 | ..... | 11½d. to 10½d. | (*b*) | ..... |
| Carpenters' Improvers (Assistants) | 1 | 54 | ..... | 8d. | (*b*) | ..... |
| Pipe Fitters | 5 | 54 | ..... | 8½d. to 7d. | (*b*) | ..... |
| Pipe Fitters' Mates (Assistants) | 5 | 54 | ..... | 6½d. to 6d. | (*c*) | ..... |
| Brass Finishers | 2 | 54 | ..... | 8d. | (*b*) | ..... |
| Brass Improvers | 2 | 54 | ..... | 4½d. | (*c*) | ..... |
| Winders | 3 | 54 | ..... | 10½d. | (*b*) | ..... |
| Jointers Mates (Assistants) | 12 | 53½ | ..... | 5½d to 3d. | (*b*) | ..... |
| Conduit Layers | 7 | 53½ | ..... | 8½d. to 6½d. | (*b*) | ..... |
| Fusemen | 4 | 53½ | ..... | 8d. to 5½d. | (*b*) | ..... |
| Lamp Trimmers | 15 | 45 | 30/- per wk. | ..... | (*c*) | 1 week. |
| Lamp Trimmers' Mates (Assistants) | 4 | 45 | 16/- per wk. | ..... | (*b*) | ..... |

For Notes relating to this table, see page 612.

| *Occupation.* | *Number Employed.* | *Hours per Week.* | *Rate of Pay per Day or Shift.* | *Wages per Hour.* | *Extras, Overtime, Bonus, Etc.* | *Holidays With Pay.* |
|---|---|---|---|---|---|---|
| Mechanics ..... | | | | | | |
| Fitters ..... | 15 | 54 | 50/- per wk. | to 7d. per hr. | (*b*) | ..... |
| Fitters' Improvers (Assistants). | 10 | 54 | ..... | 6d. to 2½d. | (*c*) | ..... |
| Turners ..... | 12 | 54 | 50/- per wk. | to 8d. per hr. | (*b*) | ..... |
| Turners' Improvers (Assistants). | 6 | 54 | ..... | 6d. to 5½d. | (*c*) | ..... |
| Plumbers ..... | 3 | 53½ | 45/- per wk. | to 7½d. per hr. | (*b*) | ..... |
| Plumbers' Mates (Assistants)... | 1 | 53½ | ..... | 5½d. | (*b*) | ..... |
| Bricklayers ..... | 20 | 54 | ..... | 11d. to 10½d. | (*b*) | ..... |
| Blacksmiths ..... | 4 | 54 | ..... | 11d. to 10d. | (*b*) | ..... |
| Blacksmiths' Improvers (Assistants) ..... | 2 | 54 | ..... | 5½d. | (*c*) | ..... |
| Laborers and Gangers..... | 55 | 54 | ..... | 8d. to 6d. | (*b*) | ..... |
| Watchmen, Station..... | 2 | 65 | 31/6 and 28/- per week.. | ..... | ..... | 1 week and bank holidays. |
| Watchmen, Street..... | 13 | 84 | 4/- per shift. | ..... | ..... | ..... |
| Storemen ..... | 8 | 56½ | 34/- to 21/- per week.. | ..... | Bonus of 2/- per week if work is satisfactory ... | ..... |

* Junior Engineers take one shift of 8 hours per day or night. Senior Engineers take one heavy shift or all day, as required. Remuneration from £104 to £300 per annum, payable monthly. Superintendents of departments receive from £350 per annum, payable monthly.

(*a*) Time and quarter for overtime and time and half for Sundays; bonus on cost.

(*b*) Overtime allowance, time and quarter to double time.

(*c*) Overtime allowance, time and quarter; bonus of 2/6 per week if work is satisfactory.

For Notes relating to this table, see page 612.

## Glasgow Corporation Tramways.

### *Traffic Employees.*

| *No. of Employees.* | *Class of Employees.* | *Working Hours Per Week.* | *Rate of Wages.* *Rate Per Hour.* | *Rate Per Week.* |
|---|---|---|---|---|
| 30 | Depot Clerks..... | 54 | ..... | 32/ 6 to 50/- |
| *2,335 | Motormen and Conductors ..... | 54 | ..... | ..... |
| 34 | Traffic Regulators..... | 54 | ..... | 32/- to 36/- |
| 42 | Ticket Inspectors..... | 54 | ..... | 32/- to 38/ 6 |
| 2 | Motor Inspectors..... | 54 | ..... | 32/- to 36/- |
| 10 | Sandmen ..... | 54 | 5d. to 5½d. | 22/ 6 to 24/ 9 |
| 9 | Trackmen ..... | 54 | 3/8 per day | 22/- |
| 25 | Trolley Boys..... | 54 | 1/5 per day | 8/6 |
| 8 | Points Boys..... | 54 | 1/2 per day | 7/- |
| 282 | Car Cleaners..... | 54 | 3/8 to 4/4 per shift | 22/- to 26/- |
| 16 | Pit Cleaners..... | 54 | 3/6 per shift | 21/- |
| 14 | Car Greasers ..... | 54 | 5d. to 5½d. | 22/ 6 to 24/ 9 |
| 2,807 | | | | |

| | *General Employees.* | | *Repairers, Etc., at Depots.* | |
|---|---|---|---|---|
| 13 | Night Inspectors..... | 54 | ..... | 42/ 6 to 50/- |
| 17 | Depot Fitters..... | 54 | | |
| | 12 Night Shift..... | 54 | 8¾d. | 39/ 4½ |
| | 5 Day Shift..... | 54 | 8d. | 36/- |
| 27 | Truckmen ..... | 54 | 6¾d. to 7d. | 28/ 1½ to 31/ 6 |
| 21 | Controllermen ..... | 54 | 5¾d. to 6¾d. | 25/10½ to 29/ 3 |
| 13 | Handymen (Night Shift) ..... | 54 | 5½d. to 5¾d. | 24/ 9 to 25/10½ |
| 5 | Handymen (Day Shift) | 54 | 5¾d. to 6¾d. | 25/10½ to 28/ 1½ |
| 96 | | | | |

| | *Overhead Repairers.* | | | |
|---|---|---|---|---|
| 28 | Linesmen ..... | 58 | 6d. to 9d. | 27/- to 40/ 6 |
| 5 | Tower Wagon Drivers. | 60 | 4/2 per shift. | 25/- |
| 6 | Construction Labourers | 56 | 6d to 7d. | 28/- to 32/ 8 |
| 1 | Leading Construction Labourer ..... | 56 | 7½d. | 35/- |
| 40 | | | | |

| | *Employees Connected with Distribution of Power. Pinkston Power Station.* | | | |
|---|---|---|---|---|
| 1 | Superintendent of Power Station ..... | .. | ..... | 120/- |
| 4 | Charge Electricians.... | 48 | ..... | 45/- to 60/- |
| 3 | Shift Engineers..... | 48 | ..... | 45/- to 55/- |
| 1 | Relief Engineer..... | .. | ..... | 50/- |
| 6 | Drivers ..... | 48 | ..... | 36/- to 40/- |
| 36 | Greasers ..... | 48 | 4/6 per shift. | 27/- |
| 3 | Feed Pump Attendants | 48 | 4/6 per shift. | 27/- |
| 3 | Leading Stokers..... | 48 | 5/8 per shift. | 34/- |
| 7 | Stokers ..... | 48 | 4/8 per shift. | 28/- |
| 3 | Switchboard Attendants ..... | 48 | 2/8 to 3/- per shift. | 16/- to 18/- |

* See separate scale of wages.

| No. of Employees. | Class of Employees. | Working Hours Per Week. | Rate of Wages. Rate Per Hour. | Rate Per Week. |
|---|---|---|---|---|
| 2 | Basement Attendants.. | 56 | 5d. to 6½d. | 23/ 4 to 30/ 4 |
| 1 | Electric Craneman..... | 48 | 4/8 per shift. | 28/– |
| 4 | Coal Conveyors..... | 56 | One at | 25/– |
| | | | One at 6d. | 28/– |
| | | | Two at 5d. | 23/4 |
| 11 | Cleaners ..... | 56 | ..... | 10/– to 28/– |
| 4 | Motor Attendants..... | 48 | 6½d. to 7½d. | 25/– to 30/– |
| 1 | Slinger ..... | 54 | 7d. | 31/6 |
| 1 | Storeman ..... | 56 | ..... | 21/– |
| 1 | Watchman ..... | 72 | 4d. | 24/– |
| 2 | Clerks ..... | .. | ..... | One at 32/6 |
| | | | ..... | One at 30/– |
| 1 | Switchroom Attendant. | 48 | ..... | 29/– |
| 1 | Foreman Fitter..... | 51 | ..... | 55/– |
| 5 | Fitters ..... | 51 | ..... | 36/– |
| 1 | Wireman ..... | 51 | 8d. | 34/– |
| 1 | Boiler Fitter ..... | 51 | 7½d. | 31/10½ |
| 3 | Labourers .....54 to | 56 | 5d. to 6d. | 23/ 4 to 27/– |
| 106 | | | | |
| | *Sub-Stations.* | | | |
| 32 | Sub-station Attendants. | 48 | 2/– to 6/8 per shift. | 12/– to 40/– |
| | *Car Works Employees.* | | | |
| 1 | Chief Foreman..... | .. | ..... | 100/– |
| 1 | Foreman, Wood Workers ..... | .. | ..... | 70/– |
| 1 | Foreman, Iron Workers ..... | .. | ..... | 57/6 |
| 1 | Foreman, Blacksmiths. | .. | ..... | 55/– |
| 1 | Foreman, Electricians. | .. | ..... | 52/6 |
| 1 | Foreman, Painters.... | .. | ..... | 55/– |
| 1 | Foreman, Saddlers.... | .. | ..... | 35/– |
| 27 | Fitters ..... | 51 | 7d. to 9d. | 29/ 9 to 38/ 3 |
| 14 | Machinemen ..... | 51 | 6d. to 9d. | 25/ 6 to 42/ 6 |
| 18 | Car Overhaul Fitters.. | 51 | 8d. to 8¾d. | 34/– to 37/ 2½ |
| 14 | Car Overhaul Handymen ..... | 51 | 5½d. | 23/4 |
| 10 | Vertical Machinemen.. | 51 | 5d. to 6½d. | 21/ 3 to 27/ 7 |
| 2 | Roof Railers..... | 51 | 6½d. to 7½d. | 26/ 6¾ to 31/10½ |
| 4 | Tinsmiths ..... | 51 | 8d. to 8½d. | 34/– to 36/ 1½ |
| 7 | Light Platers ..... | 51 | 8d. to 8½d. | 34/– to 36/ 1½ |
| 4 | Plumbers ..... | 51 | 9½d. | 40/4 |
| 23 | Brass Finishers and Moulders ..... | 51 | 6½d. to 10d. | 26/ 6¾ to 42/ 6 |
| 2 | Glaziers ..... | 51 | 8½d. | 36/1½ |
| 2 | Slaters ..... | 51 | 9d. | 38/3 |
| 1 | Rigger ..... | 51 | 5½d. | 23/4 |
| 2 | Enginemen ..... | 51 | 5½d. | 23/4 |
| 10 | Punch Repairers..... | 51 | 7½d. to 9d. | 31/10 to 38/ 3 |
| 4 | Steam Hammer Boys.. | 51 | ..... | 9/– |
| 21 | Blacksmiths ..... | 51 | 8d. to 8½d. | 34/– to 36/ 1½ |
| 23 | Hammermen ..... | 51 | 5½d. to 5¾d. | 23/ 4 to 24/ 5½ |
| 6 | Apprentices ..... | 51 | ..... | 5/– to 13/– |
| 22 | Wiremen and Armature Winders ..... | 51 | 7d. to 9d. | 29/ 9 to 38/ 3 |

| No. of Employees. | Class of Employees. | Working Hours Per Week. | Rate of Wages. Rate Per Hour. | Rate Per Week. |
|---|---|---|---|---|
| 8 | Wiremen's Labourers.. | 51 | 5d. to 6¾d. | 21/ 3 to 28/ 8½ |
| 2 | Cranemen ..... | 51 | 6d. | 25/6 |
| 80 | Car Builders ..... | 51 | 8½d. | 36/1½ |
| 23 | Joiners ..... | 51 | 10d. | 42/6 |
| 17 | Wood Machinemen.... | 51 | 8d. to 10d. | 34/– to 42/ 6 |
| 2 | Patternmakers ..... | 51 | 8½d. | 36/1½ |
| 3 | Mill and Cartwrights.. | 51 | 8½d. | 36/1½ |
| 36 | Painters ..... | 51 | 7½d. to 8d. | 31/10½ to 34/– |
| 18 | Polishers ..... | 51 | 8d. | 34/– |
| 113 | Labourers ..... | 51 | 5d. to 7½d. | 21/ 3 to 30/ 9½ |
| 4 | Watchmen ..... | 72 | 3/10 per shift. | 23/– |
| 3 | Saddlers ..... | 51 | ..... | 30/– |
| 1 | Tailor ..... | 51 | ..... | 32/6 |
| 1 | Machinist ..... | 51 | ..... | 16/– |
| 8 | Clerks ..... | .. | ..... | 16/ 6 to 50/– |
| 542 | | | | |
| | *Permanent Way Employees.* | | | |
| 1 | Chief Foreman ..... | .. | ..... | 77/6 |
| 15 | Squad Foremen..... | .. | ..... | 37/ 6 to 52/ 6 |
| 5 | Timekeepers ..... | .. | ..... | 30/– to 42/ 6 |
| 1 | Inspector ..... | .. | ..... | 47/6 |
| 2 | Sett Checkers ..... | .. | ..... | 24/ 6 to 34/– |
| 48 | Paviors ..... | 56 | 8d. | 37/4 |
| 12 | Platelayers ..... | 56 | 5½d. to 5¾d. | 24/ 6 to 26/10 |
| 34 | Boilermen ..... | 56 | 5½d. | 25/8 |
| 14 | Sizers ..... | 56 | 2½d. to 4d. | 10/ 7½ to 17/– |
| 1 | Mason ..... | 56 | 9½d. | 44/4 |
| 384 | Labourers ..... | 56 | 4½d. to 6d | 21/– to 25/ 8 |
| 1 | Yardman ..... | 56 | ..... | 32/6 |
| 1 | Yard Clerk..... | 56 | ..... | 23/– |
| 48 | Watchmen ..... | 84 | 3d. | 21/– |
| 6 | Bonders ..... | 56 | 8d. | 37/4 |
| 1 | Fitter ..... | 56 | 7½d. | 35/– |
| 16 | Borers ..... | 56 | 5½d. to 6d. | 24/ 6 to 28/– |
| 3 | Stonebreakers ..... | 56 | 2/9 per cub. yd. | .... |
| 1 | Storeman ..... | 56 | 6d. | 28/– |
| †25 | Dressers ..... | 56 | ..... | .... |
| ‡24 | Carters ..... | 56 | 4/2 to 4/4 per day. | 25/– to 26/– |
| 643 | | | | |
| | *Buildings Employees.* | | | |
| 1 | Foreman ..... | .. | ..... | 52/6 |
| 1 | Inspector ..... | .. | ..... | 40/– |
| 6 | Bricklayers ..... | 51 | 9½d. | 40/4½ |
| 1 | Mason ..... | 51 | 9½d. | 40/4½ |
| 3 | Slaters and Glaziers... | 51 | 9d. | 38/3 |
| 7 | Joiners ..... | 51 | 10d. | 42/6 |
| 2 | Plumbers ..... | 51 | 9½d. | 40/4½ |
| 4 | Painters ..... | 51 | 9d. | 38/3 |
| 13 | Labourers ..... | 56 | 5d. to 5½d. | 23/4 to 25/ 8 |
| 38 | | | | |

† Cleaning stones, 10d. per 100; re-dressing stones, 2/6 per ton, or 1½d. per cwt.

‡ Double carts, 4/8 per day; 28/– per week.

*Mains Department.*

| No. of Employees. | Class of Employees. | Working Hours Per Week. | Rate of Wages. Rate Per Hour. | Rate Per Week. |
|---|---|---|---|---|
| 1 | Superintendent ..... | 56 | ..... | 65/– |
| 8 | Inspectors ..... | 56 | ..... | 20/– to 52/ 6 |
| 1 | Foreman Jointer..... | 56 | ..... | 52/6 |
| 3 | Jointers ..... | 56 | 9½d. | 44/4½ |
| 14 | Labourers ..... | 56 | 4½d. to 6d. | 22/ 2 to 28/– |
| 3 | Apprentices ..... | 56 | ..... | 11/– |
| 1 | Fitter ..... | 56 | 9d. | 42/– |
| 31 | | | | |

*Horsing Employees.*

| | | | | |
|---|---|---|---|---|
| 1 | Foreman ..... | .. | ..... | 32/6 |
| 1 | Coachman ..... | .. | ..... | 30/– |
| 3 | Vanmen ..... | 60 | ..... | 28/– to 30/– |
| 2 | Lorrymen ..... | 60 | 4/4 per day. | 26/– |
| 2 | Store and Lorry Boys.. | 60 | 3/10 per day. | 23/– |
| 2 | Horseshoers ..... | 51 | ..... | 1 at 42/–<br>1 at 36/– |
| 2 | Handymen ..... | 60 | 3/6 to 4/– per day. | 21/– to 24/– |
| 4 | Horsekeepers, etc..... | 60 | 3/8 per day. | 22/– |
| 1 | Granary Foreman .... | 54 | ..... | 32/6 |
| 4 | Granary Employees... | 54 | ..... | 21/ to 25/– |
| 22 | | | | |

*Summary.*

| Class. | No. of Employees |
|---|---|
| Traffic Staff | 2,807 |
| Repairers, etc., at Depots | 96 |
| Overhead Repairers | 40 |
| Pinkston Power Station | 106 |
| Sub-station Attendants | 32 |
| Coplawhill Car Works | 542 |
| Permanent Way | 643 |
| Buildings Employees | 38 |
| Mains Department | 31 |
| Horsing Employees | 22 |
| | 4,357 |

46 Bath Street, August 15, 1905.

## GLASGOW CORPORATION TRAMWAYS.

*Motormen and Conductors.*

July, 1894—

Drivers and Conductors were paid at 4/– per day = 24/– per week with 6d. extra for Sunday.

(No scale of wages.)

May, 1895—

21/– to 26/– per week, with 6d. extra for Sundays.

*Scale.*

3/6 per day for first three months = 21/– per week.
3/9 per day for next nine months = 22/6 per week.
4/– per day for second year = 24/– per week.
4/2 per day for third year = 25/– per week.
4/4 per day for fourth year = 26/– per week.

September, 1896—

23/- to 27/- per week.

*Scale.*

First year..... { First six months, 3/10d. per day = 23/- per week.
Second six months, 4/- per day = 24/- per week.
Second year ..... 4/2d. per day = 25/- per week.
Third year ..... 4/4d. per day = 26/- per week.
Thereafter ..... 4/6d. per day = 27/- per week.

Rates apply equally to Sundays and week days.

August, 1899—

24/- to 28/- per week.

*Scale.*

First year..... { First six months, 4/- per day = 24/- per week.
Second six months, 4/2d. per day = 25/- per week.
Second year..... 4/4d. per day = 26/- per week.
Third year..... 4/6d. per day = 27/- per week.
Thereafter ..... 4/8d. per day = 28/- per week.

Rates apply equally to Sundays and week days.

June, 1901—

Motormen ..... 24/- to 30/- per week.
Conductors ..... 24/- to 28/- per week.

*Scale.*

Qualified Motormen.

First year..... { First six months, 4⅘d. per hour = 24/- per week.
Second six months, 5d. per hour = 25/- per week.
Second year..... { Third six months, 5⅕d. per hour = 26/- per week.
Fourth six months, 5⅖d. per hour = 27/- per week.
Third year..... { Fifth six months, 5⅗d. per hour = 28/- per week.
Sixth six months, 5⅘d. per hour = 29/- per week.
Thereafter ..... 6d. per hour = 30/- per week.

Conductors Who Do Not Qualify as Motormen.

First year..... { First six months, 4⅘d. per hour = 24/- per week.
Second six months, 5d. per hour = 25/- per week.
Second year..... 5⅕d. per hour = 26/- per week.
Third year..... 5⅖d. per hour = 27/- per week.
Thereafter ..... 5⅗d. per hour = 28/- per week.

Rates apply equally to Sundays and week days.

NOTE—The above scale was altered from rate per hour to rate per day on 11th July, 1901, the weekly amount remaining the same.

February, 1905—

*Present Scale.*

Qualified Motormen-Conductors.

First year..... { First six months, 4/- per day = 24/- per week.
Second six months, 4/2 per day = 25/- per week.
Second year..... { Third six months, 4/4 per day = 26/- per week.
Fourth six months, 4/6 per day = 27/- per week.
Third year..... { Fifth six months, 4/8 per day = 28/- per week.
Sixth six months, 4/10 per day = 29/- per week.
Fourth year ..... 5/- per day = 30/- per week.
Thereafter ..... 5/2 per day = 31/- per week.

Rates apply equally to Sundays and week days.

46 Bath Street, 13th April, 1905.

**Manchester Corporation Tramways.**

WAGES OF DRIVERS, GUARDS, ETC.

| | *Rate Per Hour.* | *Earnings Per Week of 54 Hours.* |
|---|---|---|
| Drivers— | | |
| On appointment | 5¾d. | 25/10½ |
| At the end of one year's service | 6¼d. | 28/ 1½ |
| At the end of two years' service | 6¾d. | 30/ 4½ |
| At the end of three years' service | 7d. | 31/ 6 |
| Guards— | | |
| On appointment | 5½d. | 24/ 9 |
| At the end of one year's service | 6d. | 27/– |
| At the end of two years' service | 6½d. | 29/ 3 |
| At the end of three years' service | 6¾d. | 30/ 4½ |
| Washers and Cleaners | .... | 25/– |
| Timekeepers | .... | 32/ 6 |
| Ticket Inspectors— | | |
| On appointment | .... | 32/ 6 |
| At the end of two years' service | .... | 35/– |
| Depot Clerks | .... | 35/– |

The above rates apply equally to Sundays and week days.

(*Report by the general manager prior to the operation of the tramways by the corporation.*)

In accordance with the instructions of the committee, the general manager begs to submit the following report as to the wages paid to the drivers, guards, etc., employed by the Manchester Carriage and Tramways Company, and the wages paid by the various corporations named in the accompanying statement.

The drivers and guards in the service of the Manchester Carriage and Tramways Company are paid at the following rates, namely:

*Drivers.*

First class, 4s. 8d. per day. Sundays, 6d. per hour.
Second class, 4s. 4d. per day. Sundays, 5½d. per hour.

*Conductors.*

First class, 4s. 0d. per day. Sundays, 5d. per hour.
Second class, 3s. 8d. per day. Sundays, 4½d. per hour.

The men are paid at the maximum rate after twelve months' regular service.

The working hours are 10½ per day for the six ordinary week days, and Sunday work is arranged as follows: One Sunday the men are off duty; the next Sunday they work 8½ hours; and the third Sunday they work 13½ hours.

The average working hours per week thus work out as follows, namely:

| | *Hours.* |
|---|---|
| First week, 6 days at 10½ hours | 63 |
| Second week, 6 days at 10½ hours, plus 8½ hours on Sunday | 71½ |
| Third week, 6 days at 10½ hours, plus 13½ hours on Sunday | 76½ |
| Divide by 3 ) | 211 |
| Average per week | 70⅓ |

Similarly, the average weekly wages work out as follows, namely:

*Drivers, First Class.*

| | *s.* | *d.* |
|---|---|---|
| First week, 6 days at 4s. 8d | 28 | 0 |
| Second week, 6 days at 4s. 8d., plus 8½ hours on Sunday at 6d | 32 | 3 |
| Third week, 6 days at 4s. 8d., plus 13½ hours on Sunday at 6d | 34 | 9 |
| Divide by 3 ) | 95 | 0 |
| Average per week | 31 | 8 |

*Drivers, Second Class.*

| | | |
|---|---|---|
| First week, 6 days at 4s. 4d | 26 | 0 |
| Second week, 6 days at 4s. 4d., plus 8½ hours on Sunday at 5½d | 29 | 11 |
| Third week, 6 days at 4s. 4d., plus 13½ hours on Sunday at 5½d | 32 | 2 |
| Divide by 3 ) | 88 | 1 |
| Average per week | 29 | 4 |

*Guards, First Class.*

| | | |
|---|---|---|
| First week, 6 days at 4s. 0d | 24 | 0 |
| Second week, 6 days at 4s. 0d., plus 8½ hours on Sunday at 5d | 27 | 6 |
| Third week, 6 days at 4s. 0d., plus 13½ hours on Sunday at 5d | 29 | 7 |
| Divide by 3 ) | 81 | 1 |
| Average per week | 27 | 0 |

*Guards, Second Class.*

| | | |
|---|---|---|
| First week, 6 days at 3s. 8d | 22 | 0 |
| Second week, 6 days at 3s. 8d., plus 8½ hours on Sunday at 4½d | 25 | 2 |
| Third week, 6 days at 3s. 8d., plus 13½ hours on Sunday at 4½d | 27 | 1 |
| Divide by 3 ) | 74 | 3 |
| Average per week | 24 | 9 |

Dividing the average weekly wages by the average hours worked, the wages paid per hour come out as follows:

*Drivers.*

First class..... 5.4d. per hour.
Second class..... 5d. per hour.

*Guards.*

First class.....4.6d. per hour.
Second class.....4.2d. per hour.

The average wages paid by other corporations to the motormen and guards on the electric cars are as follows:

Motormen..... 5.2d. to 6.1d. per hour.
Guards..... 4.4d. to 5d. per hour.

and the average working hours are 60 per week.

The comparison between average rates paid by the various corporations and the rates paid by the Manchester Carriage and Tramways Company is therefore as follows:

*Corporations (Average).*

Motormen (maximum), 60 hours at 6.1d. = 30s. 6d. per week.
Motormen (minimum), 60 hours at 5.2d. = 26s. 0d. per week.
Guards (maximum), 60 hours at 5d. = 25s. 0d. per week.
Guards (minimum), 60 hours at 4.4d. = 22s. 0d. per week.

*Carriage Company.*

Drivers (first class), 70⅓ hours at 5.4d. = 31s. 8d. per week.
Drivers (second class), 70⅓ hours at 5d. = 29s. 4d. per week.
Guards (first class), 70⅓ hours at 4.6d. = 27s. 0d. per week.
Guards (second class), 70⅓ hours at 4.2d. = 24s. 9d. per week.

The deputation from the Amalgamated Association of Tramway and Hackney Carriage Employees, which recently attended the committee, suggested that the wages should be as follows:

Drivers, maximum..... 7d. per hour.
Drivers, minimum..... 6½d. per hour.
Guards, maximum..... 6d. per hour.
Guards, minimum..... 5½d. per hour.

and that the working hours should be 8 hours per day.

Regarding the other classes of employees, the following is a brief comparison of the average rates paid by other corporations and the rates paid by the Manchester Carriage and Tramway Company:

*Manchester Carriage and Tramways Company*

| *Class.* | *Rates.* | *Hours Per Week.* |
|---|---|---|
| Ticket Inspectors | 28/– per week | 70 |
| | 31/6 per week | 70 |
| | 35/– per week | 70 |
| Night Inspectors | None employed | .. |
| Motor Inspectors | None employed | .. |
| Washers and Cleaners | 4 d. per hour | 78 |
| | 4.3d. per hour | 78 |
| Timekeepers | 5.3d. per hour | 68 |

*Corporations (Average).*

| *Class.* | *Rates.* | *Hours Per Week.* |
|---|---|---|
| Ticket Inspectors | 28/2 per week | 64 |
| | 32/5 per week | 64 |
| Night Inspectors | 30/– per week | 60 |
| | 35/2 per week | 60 |
| Motor Inspectors | 7.3d. per hour | 60 |
| Washers and Cleaners | 4.2d. per hour | 57 |
| | 5d. per hour | 57 |
| | 5.4d. per hour | 58 |
| | 6d. per hour | 58 |
| Timekeepers | 7.9d. per hour | 60 |

J. M. McELROY,
*General Manager.*

Town Hall, Manchester, January 11, 1901.

Liverpool Corporation Tramways.

(All work six days per week.)

| *Rank of Employee.* | *Rate of Pay Per Hour, Day and Week.* | *Hours of Labor Per Day and Week.* | *Number of Hours Per Day over which Labor is Spread.* | *System of Graduated Scale of Pay.* | *Holiday Allowance With Pay Per Annum and Season.* |
|---|---|---|---|---|---|
| Ticket Inspectors..... | 6/– day..... | 10 day; 60 week | 12 | Night Inspectors, 7/6d. night..... | 7 days |
| Timekeepers ..... | 6/– day..... | 10 day; 60 week | 12 | 7/6d. night..... | 7 days |
| Motormen ..... | 6d. to 6½d. per hour. | 10 day; 60 week | 12 | (*a*) | 5 days |
| Conductors ..... | 5d. to 6d. per hour.. | 10 day; 60 week | 12 | (*b*) | 5 days |
| Car Cleaners..... | 5½d. per hour..... | 9 hrs.; 54 week | 10 | Promoted to Conductors, if unsatisfactory ..... | 5 days |
| Car Shed—Night Staff..... | ..... | 9 hours day or night; 54 week | | ..... | (*c*) |

(*a*) 6d. on appointment; 6½d. after twelve months, service; 6½d. after two years' service; merit pay, 1/– week, ten years' service; 2/– week, twenty years' service; 3/– week, thirty years' service.

(*b*) 5d. per hour on appointment; 5½d. after twelve months' service; 6d. after two years' service; merit pay as Motorman.

(*c*) Foremen; 2 weeks; Assistant Foremen, 1 week; Staff, 5 days, April to September.

LIVERPOOL CORPORATION TRAMWAYS.

*Rates of Pay of Men Employes at Lambeth Road Carriage Works.*

Number of men employed at works, 274.

| *Occupation.* | *Rates of Pay Per Hour.* | *Hours Per Week.* |
|---|---|---|
| Car Wiremen and Controller Men | 6d. to 7d. | 53 |
| Pit Men | 7d. | 53 |
| Helpers | 6d. to 6½d. | 53 |
| Laborers | 5 7-16d. to 5½d. | 53 |
| Armature Winders | 9½d. | 53 |
| *Painters—* | | |
| Foremen | 10d. | 53 |
| Painters and Writers | 8½d. to 8⅝d. | 53 |
| Painters | 7⅝d. | 53 |
| *Car Body Makers—* | | |
| Foreman | 10d. | 53 |
| Body Makers | 8½d. | 53 |
| Whitesmiths | 7 11-16d. | 53 |
| Tinsmiths | 8⅝d. | 53 |
| *Fitters—* | | |
| Foremen | 10½d. | 53 |
| Ordinary | 8½d. | 53 |
| *Coachsmiths—* | | |
| Foreman | 10½d. | 53 |
| Ordinary | 8½d. | 53 |
| Laborers | 5⅝d. | 53 |
| *Wood Working Machine Men—* | | |
| Foreman | 10d. | 53 |
| Ordinary | 7d. to 8d. | 53 |
| Assistants | 6d. | 53 |
| Brass Finishers | 8½d. | 53 |
| Pattern Makers | 9d. and 9½d. | 53 |
| Engine Drivers | 6d. | 53 |
| Coach Trimmer | 8½d. | 53 |

**London County Council Tramways.**

Statement of rates of pay and hours of labor which prevailed with the various companies as compared with rates of pay and hours of labor now in force on the London County Council tramways.

*London Tramways.*

Acquired January, 1899.

| *Designation.* | *Rate of Pay Per Week.* | *Number of Days Per Week.* | *Hours of Labor Per Week.* |
|---|---|---|---|
| Drivers | 31s. 6d. to 42s. | 7 | 80 |
| Conductors | 31s. 6d. to 42s. | 7 | 80 |
| Stablemen | 23s. to 30s. | 7 | 77 |
| Washers | 22s. to 28s. | 7 | 77 |
| Farriers | 33s. to 36s. | 6 | 56½ |
| Track Cleaners | 21s. to 24s. 6d. | 7 | 77 |
| Pointsmen | 15s. to 20s. | 7 | 77 |
| Trace Boys | 15s. to 18s. | 7 | 77 |
| Ticket Inspectors | 40s. to 42s. | 7 | 80 |
| Regulators | 42s. | 7 | 80 |
| Night Inspectors | 32s. to 42s. | 7 | 74 |
| Foremen | 36s. to 55s. | 7 | 80 |
| Deputy Foreman | 40s. | 7 | 80 |

*Southeast Metropolitan.*

Acquired April, 1902.

| *Designation.* | *Rate of Pay Per Week.* | *Number of Days Per Week.* | *Hours of Labor Per Week.* |
|---|---|---|---|
| Drivers | 33s. 3d. to 42s. | 7 | 77 |
| Conductors | 33s. 3d. to 38s. 6d. | 7 | 77 |
| Stablemen | ..... | .. | .. |
| Washers | 29s. 2d. | 7 | 70 |
| Farriers | ..... | .. | .. |
| Track Cleaners | ..... | .. | .. |
| Pointsmen | ..... | .. | .. |
| Trace Boys | 13s. | 7 | 60 |
| Ticket Inspectors | 32s. to 35s. 10d. | 7 | 77 |
| Regulators | ..... | .. | .. |
| Night Inspectors | ..... | .. | .. |
| Foreman Washer | 35s. | 7 | 70 |
| Deputy Foreman | ..... | .. | .. |

*South London Tramways.*

Acquired November, 1902.

| *Designation.* | *Rate of Pay Per Week.* | *Number of Days Per Week.* | *Hours of Labor Per Week.* |
|---|---|---|---|
| Drivers | 26s. 3d. to 31s. 6d. | 7 | 70 |
| Conductors | | 7 | 70 |
| Stablemen | 25s. 4d. to 28s. | 7 | 77 |
| Washers | 33s. 3d. | 7 | 70 |
| Farriers | 36s. to 42s. | 6 | 57 |
| Track Cleaners | 21s. | 7 | 70 |
| Pointsmen | ..... | .. | .. |
| Trace Boys | 16s. | 7 | 70 |
| Ticket Inspectors | 37s. 6d. | 7 | 81 |
| Regulators | 35s. | 7 | 81 |
| Night Inspectors | 40s. 3d. | 7 | 81 |
| Foremen | 45s. to 65s. | 7 | 84 |
| Deputy Foreman | 37s. 6d. | 7 | 84 |

*London, Deptford and Greenwich.*

Acquired July, 1904.

| *Designation.* | *Rate of Pay Per Week.* | *Number of Days Per Week.* | *Hours of Labor Per Week.* |
|---|---|---|---|
| Drivers | 33s. 3d. to 40s. 3d. | 7 | 77 |
| Conductors | 33s. 3d. to 36s. 9d. | 7 | 77 |
| Stablemen | 27s. | 7 | 70 |
| Washers | 27s. to 32s. 6d. | 7 | 70 |
| Farriers | ..... | .. | .. |
| Track Cleaners | ..... | .. | .. |
| Pointsmen | ..... | .. | .. |
| Trace Boys | ..... | .. | .. |
| Ticket Inspectors | 36s. 9d. to 40s. 3d. | 7 | 91 |
| Regulators | 38s. 6d. | 7 | 91 |
| Night Inspectors | 40s. 3d. | 7 | 91 |
| Foremen | 42s. | 7 | 84 |
| Deputy Foreman | ..... | .. | .. |

*London County Council.*

| *Designation.* | *Rate of Pay Per Week.* | *Number of Days Per Week.* | *Hours of Labor Per Week.* |
|---|---|---|---|
| Drivers | 28s. 6d. to 37s. 6d. | 6 | 60 |
| Conductors | 28s. 6d. to 37s. 6d. | 6 | 60 |
| Stablemen | 26s. | 6 | 60 |
| Washers | 25s. to 30s. | 6 | 60 |
| Farriers | 30s. to 43s. 6d. | 6 | 54 |
| Track Cleaners | 25s. | 6 | 60 |
| Pointsmen | 24s. | 6 | 60 |
| Trace Boys | 14s. to 18s. | 6 | 60 |
| Ticket Inspectors | 42s. | 6 | 60 |
| Regulators | 42s. | 6 | 60 |
| Night Inspectors | 42s. | 6 | 60 |
| Foremen | 42s. to 64s. 6d. | 7 | 70 |
| Deputy Foreman | 42s. | 7 | 70 |

**Dublin United Tramways Company.**

| *Department and Occupation.* | *Number.* | | *Hours.* | *Rate.* |
|---|---|---|---|---|
| Traffic— | | | | |
| Conductors | 355 | | 70 | 21/– to 26/6 per week |
| Motormen | 360 | | 70 | 24/6 to 30/– per week |
| Traffic Insprs., etc. | 6 | | Irreg. | 42/6 to 65/– (Incl. D. Supt., 65/–) |
| Timekeepers and Foremen | 26 | | .. | 30/– to 35/– per week |
| Washers, Yardmen, Track Cleaners, etc. | 63 | | 10 | 15/– to 21/– per week (Genl. rate, 19/–) |
| Ticket Inspectors | 15 | | Irreg. | 28/– to 32/6 per week |
| Points Boys | 18 | | 70 | 9/– per week |
| Lampmen | 3 | | 10 | 19/–, 21/– and 28/– per week |
| Sanding | 10 | | 10 | 19/– to 21/– per week |
| Way Bills | 2 | | Irreg. | 26/6 and 8/– per w'k |
| Punch Boxes | 1 | | .. | 10/– per week |
| L. P. | 1 | | .. | 20/– per week |
| | | 860 | | |
| Stables— | | | | |
| Foreman | 1 | | .. | 34/– per week |
| Shoers | 2 | | .. | 32/– and 30/– per w'k |
| Stablemen | 6 | | .. | 19/– to 22/– per week |
| Coachmen | 2 | | .. | 24/6 per week |
| Harness | 3 | | .. | 21/–, 28/– and 36/– per week. |
| | | 14 | | |
| Parcels— | | | | |
| Supt. | 1 | | .. | 60/– per week |
| Vanmen | 16 | | .. | 18/– per week |
| Clerks, Boys, etc. | 130 | | .. | ..... |
| | | 147 | | |

| *Department and Occupation.* | *Number.* | *Hours.* | *Rate.* |
|---|---|---|---|
| Sundries— | | | |
| Office Messengers... | 3 | .. | 10/–, 14/–, 15/– per week |
| Housekeeper ..... | 1 | .. | 40/– per week |
| Window Cleaner.... | 1 | .. | 10/– per week |
| Cottage Insp..... | 1 | .. | 35/– per week |
| Stores ..... | 2 | .. | 1 at 45/–, 1 at 75/–, inc. 15/– chg. stables. |
| Stores Labourers... | 2 | .. | 20/– and 21/– per w'k |
| | 10 | | |
| B. Bridge Car Dept.— | | | |
| Foreman ..... | 1 | .. | 70/– per week |
| Fitters ..... | 17 | .. | 3/– to 6/4 per day |
| Winders ..... | 2 | .. | 5/– and 6/4 per day |
| Wheel Press ..... | 3 | .. | 3/6 and 4/4 per day |
| Switches ..... | 1 | .. | 6/– per day |
| Wiremen ..... | 2 | .. | 2/6 and 5/– per day |
| Bearings ..... | 2 | .. | 3/8 and 4/4 per day |
| Moulder ..... | 1 | .. | 5/8 per day |
| Smiths ..... | 2 | .. | 5/5 and 3/– per day |
| Carpenter ..... | 1 | .. | 5/4 per day |
| Carter and Shunters | 2 | .. | 3/4 and 4/– per day |
| Boys ..... | 3 | .. | 1/– to 1/11 per day |
| Timekeeper ..... | 1 | .. | 32/6 per week |
| Car Cleaning and Inspection ..... | 1 | .. | 60/– per week |
| Car Cleaning and Inspection ..... | 25 | .. | 1/5½ to 4/– per day |
| | 63 | | |
| Ringsend and Sub-stas.— | | | |
| Station Supt..... | 1 | .. | £250 per an. |
| Engineers ..... | 7 | 8 | 25/– to 60/– per week |
| V Switchboards.... | 6 | 56 | 10/– to 20/– per week |
| Office ..... | 2 | 52 | 30/– and 35/– per w'k |
| Stores ..... | 2 | 52 | 15/– and 7/– per w'k |
| Drivers ..... | 3 | 8 | 5/4 and 5/6 per day |
| Greasers ..... | 9 | 8 | 4/– per day |
| Condensers ..... | 3 | 8 | 4/– per day |
| Stokers ..... | 6 | 8 | 3/6 and 4/4 per day |
| Oil Carriers ..... | 2 | 8 | 2/8½ per day |
| Yardmen ..... | 2 | 12 | 2/10½ and 3/– per day |
| Fitters ..... | 2 | 52 | 6/– and 7/11 per day |
| Boilermaker ..... | 1 | 52 | 6/4 per day |
| Coal Tower ..... | 1 | 52 | 5/8 per day |
| Cleaner ..... | 1 | 52 | 3/9 per day |
| Labourers ..... | 9 | 52 | 3/– to 4/– per day |
| | 56 | | |
| O. H. Line and Cables— | | | |
| Engineer ..... | 1 | .. | 76/11 per week |
| Emergency Crew... | 7 | .. | 3/– to 5/– per day |
| Drivers ..... | 2 | .. | 3/– to 3/6 per day |
| Cable Jointer..... | 1 | .. | 38/ per week |
| Cable Jointer's Help | 1 | .. | 18/– per week |
| Fitter ..... | 1 | .. | 4/2 per day |
| M. H. Cleaners..... | 2 | .. | 3/4 per day |
| Labourers ..... | 6 | .. | 3/– to 3/6 per day |
| | 21 | | |

| *Department and Occupation.* | *Number.* | | *Hours.* | *Rate.* |
|---|---|---|---|---|
| Inchicore Car Dept.— | | | | |
| Foreman ..... | 1 | | .. | 65/- per week |
| Clerk ..... | 1 | | .. | 32/ per week |
| Bodymaker ..... | 24 | | .. | 3/4 to 6/4 per day |
| Carpenters ..... | 3 | | .. | 4/4 to 5/4 per day |
| Smiths ..... | 7 | | .. | 3/- to 6/4 per day |
| Fitters ..... | 31 | | .. | 3/3½ to 6/4 per day |
| Painters ..... | 34 | | .. | 1/6 to 6/4 per day |
| Wiremen ..... | 3 | | .. | 2/- to 4/6 per day |
| Sundries ..... | 16 | | .. | 2/6 to 5/- per day |
| | —— | 120 | | |
| Permanent Way— | | | | |
| Foremen ..... | 6 | | .. | 5/-, 5/6 and 8/7 per day |
| Timekeeper (Head Deputy) ..... | 1 | | .. | 50/- per week |
| Platelayers ..... | 4 | | .. | 4/- and 5/- per day |
| Rammermen ..... | 5 | | .. | 3/4 per day |
| Carters ..... | 18 | | .. | 3/2 per day |
| Paviors ..... | 10 | | .. | 5/- (usual earnings) per day |
| Labourers ..... | 61 | | .. | 3/- per day |
| Watchmen ..... | 5 | | Varies | 2/8 to 3/- per day |
| Sett Dressers..... | 2 | | .. | 6/- per day |
| Tarmen ..... | 4 | | .. | 3/- and 4/- per day |
| Pointsmen ..... | 3 | | .. | 3/- and 4/- per day |
| | —— | 119 | | |
| Buildings— | | | | |
| Clerk of Works.... | 1 | | .. | 55/ per week |
| | —— | 1 | | |
| | | 1,411 | | |

**Norwich Electric Tramways Company.**

| *No.* | *Class.* | *Hours.* | *Rate of Wages.* | |
|---|---|---|---|---|
| | | | *Per Hour.* | *Per Week.* |
| 75 | Conductors ..... | 70 per week | 3¾d. to 4¼d. | ..... |
| 66 | Motormen ..... | 70 per week | 4¼d. to 5d. | ..... |
| 10 | Inspectors ..... | ..... | ..... | 32/6 to 40/- |
| 5 | Point Shifters ..... | 70 per week | 3d. | 18/- |
| 2 | Point Cleaners ..... | 70 per week | ..... | 17/6 |
| 1 | Plate Layer ..... | 56½ per week | 6d. | ..... |
| 2 | Paviors ..... | 56½ per week | 7d. | ..... |
| | Workshop: | | | |
| 1 | Foreman ..... | 56½ per week | ..... | 45/- |
| 3 | Fitters ..... | 56½ per week | 7d. to 7¼d. | ..... |
| 2 | Motor Inspectors ..... | 56½ per week | 7d. | ..... |
| 2 | Carpenters ..... | 56½ per week | 6¾d. to 7d. | ..... |
| 2 | Blacksmiths ..... | 56½ per week | 5¾d. to 6d. | ..... |
| 1 | Striker ..... | 56½ per week | 4¼d. | ..... |
| 1 | Painter ..... | 56½ per week | 6¼d. | ..... |
| 13 | Laborers ..... | 56½ per week | 4¼d. to 5d. | ..... |
| 6 | Car Cleaners ..... | 56½ per week | 4¼d. to 5d. | ..... |
| 1 | Watchman ..... | 56½ per week | 5d. | ..... |
| 3 | Engineers ..... | 9 per day | ..... | 45/- to 60/- |
| 3 | Firemen ..... | 8 per day | ..... | 25/- |
| 2 | Coal Trimmers ..... | ..... | ..... | 21/- |
| 3 | Greasers ..... | 8 per day | ..... | 22/- |

# GENERAL REMARKS UPON FINANCIAL CONDITIONS

## (Schedule IV)*

*To the Commission on*
*Municipal Ownership and Operation of the*
*National Civic Federation,*
*New York City.*

GENTLEMEN—We, the undersigned, Robert C. James, Accountant of Philadelphia, U. S. A., and Edward Hartley Turner, A. C. A., Chartered Accountant, of the firm of Astbury, Turner & Co., 42 Spring Gardens, Manchester, England, were appointed your experts in accounting to assist in the investigation made by your Commission in Great Britain. We have completed our labors, and now beg to report to you as follows:

It was our duty to answer the specific enquiries set out in Schedule IV, relating to the financial details of gas works, street railways and electric lighting, and to add such further details as we considered would be useful and pertinent to the enquiry. We have carried out these instructions as fully as the time at our disposal has allowed; but we feel that there are many points not so fully answered as might have been desirable. This arises from the fact that as our examination proceeded new points opened out which we had not time to investigate in the case of those undertakings for which our schedules had already been completed. Consequently, we would state that where any details are not given it does not necessarily follow that such information is not obtainable, but that we had not time to obtain it.

However, we hope that we have given you sufficient information to enable you to come to a definite conclusion upon the very important questions which you have to decide. * * *

*Constitution and Management of Private Companies.* The private plants examined are owned and operated by two different classes of companies. The first class, and speaking generally, the older companies, are what are termed "parliamentary companies," and are incorporated by special act of Parliament. These acts confer upon the companies powers to construct and operate works and also contain sections specifying the method in which the internal management of the company shall be carried out. The acts

*A large portion of the matter appearing in this report as submitted also appeared in the schedules for the individual plants and therefore has been omitted from the following pages, but is to be found under the appropriate headings in the preceding pages.

also contain provisions as to raising money by issue of capital stock or borrowed capital of various kinds, all of which are generally set out fully. In the case of these companies the liability of the shareholders is limited to the amount for the time being unpaid upon shares held by each shareholder. All the private gas undertakings examined are owned and operated by parliamentary companies and, in addition, the private tramway undertaking at Norwich. We have in all cases examined the special acts of Parliament relating to the above companies in connection with the financial clauses as to issue of capital stock, borrowing powers and reserve funds.

The other class of companies is incorporated under the limited liability acts officially referred to as the "Companies Acts, 1862 to 1900." These acts comprise all the legislation in respect of limited companies. As in the case of parliamentary companies all limited companies constructing and operating gas, electric lighting and street railway undertakings have to obtain the authority of Parliament either by special act or provisional order. These acts and orders specify the works which may be carried out, but do not always contain clauses as to issue of capital or borrowing powers. The internal management of these companies is regulated by the memorandum and articles of association. The memorandum is a short document which specifies:

1. The name of the company.
2. The situation of the registered office.
3. The objects for which the company is formed.
4. A statement that the liability of the members is limited.
5. A statement of the capital of the company.

The principal part of the memorandum is "the objects for which the company is formed." This is usually drawn very full because, except as defined in the memorandum of association act of 1890, no alteration in the provisions of the memorandum can be made without winding up the company. The articles of association provide for the internal management of the company, and may be altered by resolution of the shareholders as provided by the companies acts. This alteration may extend to the increase of capital of the company by resolution of the shareholders, and to decrease of capital by similar resolution requiring the consent of the court. The memorandum and articles of association, together with any special resolutions altering or amending the same, must be filed with the registrar of joint stock companies.

We have in all cases examined the memorandum and articles of association of all the private undertakings investigated in connection with the financial clauses as to issue of capital stock, borrowing powers and reserve funds. The private plants examined by us which are owned and operated by limited companies are eight in number, and comprise the whole of the electric lighting undertakings, and all the street railway undertakings with the exception of Norwich. * * *

The following is a summary of the audits of the undertakings investigated:

MUNICIPAL UNDERTAKINGS.

| *Town.* | *Elective and Mayor's Auditors.* | *Local Government Board.* | *Special Staff.* | *Professional Auditors.* |
|---|---|---|---|---|
| *Gas:* | | | | |
| Birmingham ... | Yes. | No. | Yes. | Yes. |
| Glasgow ..... | Yes. | No. | No. | Yes. |
| Leicester ..... | Yes. | No. | No. | Yes. |
| Manchester ..... | Yes. | No. | No. | Yes. |
| *Tramways:* | | | | |
| Glasgow ..... | Yes. | No. | No. | Yes. |
| Liverpool ..... | Yes. | No. | Yes. | Yes. |
| London C. C.... | No. | Yes. | No. | No. |
| Manchester ..... | Yes. | No. | No. | Yes. |
| *Electric Lighting:* | | | | |
| Glasgow ..... | No. | No. | No. | Yes. |
| Liverpool ..... | Yes. | No. | Yes. | No. |
| St. Pancras..... | No. | Yes. | No. | No. |
| Manchester ..... | Yes. | No. | No. | Yes. |

PRIVATE UNDERTAKINGS.

| *Town.* | *Board of Trade.* | *Professional Auditor Appointed by City.* | *Professional Accountants Appointed by Shareholders.* | *Shareholders Appointed by Company.* |
|---|---|---|---|---|
| *Gas:* | | | | |
| Newcastle ..... | No. | Yes. | No. | No. |
| Sheffield ..... | No. | Yes. | No. | No. |
| S. Met..... | Yes. | No. | No. | Yes. |
| *Trams:* | | | | |
| Dublin ..... | No. | No. | Yes. | Yes. |
| London United.. | No. | No. | Yes. | No. |
| Norwich ..... | No. | No. | Yes. | No. |
| *Electric Lighting:* | | | | |
| London Central. | Yes. | No. | Yes. | .... |
| London City.... | Yes. | No. (See note) | Yes. | No. |
| Westminster .... | Yes. | No. | No. | No. |
| Newcastle D.... | Yes. | No. | Yes. | No. |
| Newcastle Supply | Yes. | No. | Yes. | No. |
| St. James..... | Yes. | No. | Yes. | No. |

Note.—The City of London Company is not subject to the audit of the Board of Trade with respect to the accounts relating to supply within the city.

*Capital Stock or Share Capital of Private Companies.* The following remarks do not apply to municipalities, but only to private companies, whether incorporated by special act of Parliament or registered under the Companies (limited liability) Acts (1862-1900).

In the case of parliamentary companies the share capital which they are authorized to raise is in all cases expressly stated in the special act of Parliament incorporating the company, and no further capital can be issued without the consent of Parliament. In the case of limited companies registered under the Companies Acts, 1862-1900, the amount of share capital which they are authorized to raise is stated in the memorandum and articles of association of the company. These documents are drawn up by the company and are not subject to any control by Parliament. Consequently a limited company can increase its capital at any time by resolutions of the shareholders in general meeting provided the formalities prescribed by the companies acts are duly observed.

As previously stated, the amount of capital which a parliamentary company may raise is strictly limited by its special acts, whereas the capital raised by a limited company is absolutely in the control of the shareholders and is practically unlimited as to amount.

The capital contributed by the shareholders of a limited company always consists of a specified number of shares of a fixed value. In the case of a parliamentary company it may be issued as a stock. Both methods are adopted indiscriminately, the general practice of the larger companies (including the railway companies) being to issue stock while the majority of trading companies issue their capital in shares. The recent practice is to make all shares of the value of £1 each. The share capital both of a parliamentary company and a limited company may be issued with various preferences and is generally divided into two classes, viz.: Preference capital; ordinary capital.

The preference capital is generally entitled to a fixed limited dividend per cent. which is payable in priority to any dividend upon the ordinary capital. This dividend may be limited to the profits in any one year, or, as is more generally the case, may be cumulative and be payable out of the profits of any succeeding year. The preference capital may be issued with the right to participate pro rata with the ordinary capital in a distribution of the assets in the event of a winding up of the company—or may be repayable in priority to the ordinary capital. Both methods are adopted in practice. Full details as to the rights of the preference capital are in each case given in the schedules.

Founders shares are sometimes issued as in the cases of the St. James and Westminster private electric lighting companies. These shares were in the case of the St. James company of the total nominal value of £100, and carried the right to one-half the profits after paying seven per cent. to the ordinary shareholders. In the case of the Westminster company these founders shares

were of the total nominal value of £500. In both cases those shares have been converted into ordinary shares. * * *

*Loan Debt of Private Undertakings.* We have already referred to the fact that the loan debt which may be raised by parliamentary companies is strictly limited by their special acts. In the case of limited companies, power to borrow is given by the memorandum and articles of association and is generally subject to the control of the shareholders in general meeting. Under the articles of association the borrowing power is very often limited except with the consent of the shareholders, but there is not the same strict limit as is imposed on parliamentary companies. A further restriction on borrowing is very often imposed by the trust deed which charges the property of the company in favor of the loanholders. We have in all cases investigated referred to any restrictions which may exist and have satisfied ourselves that the amounts borrowed are in all cases within the powers possessed by the company.

In some cases the amount which a limited company may borrow is fixed at a certain percentage on the nominal capital of the company and in some cases at a certain definite proportion of the subscribed capital.

Some explanation may be required as to what is included in the term "subscribed capital." It includes the total amount of the capital stock or shares which have been actually applied for and allotted to the shareholders and is the full amount which they may be called upon to contribute towards the assets of the company, notwithstanding the fact that only part of the subscribed capital has actually been paid in cash. It includes the amount of capital paid up and the amount for the time being uncalled and unpaid. An instance of this is fully described in the schedule relating to the Newcastle District Company.

With regard to both parliamentary and limited companies the usual course is to issue a prospectus. We have, where possible, obtained a copy of the original prospectus issued.

Money may be borrowed either as a floating debt without any specific security or by way of mortgage. In all cases investigated the borrowing has been by mortgage of the property and undertaking of the company. In several cases, however, the uncalled capital is not included in the mortgage. * * *

*Municipal Loan Debt.* We have paid considerable attention to this subject in order to satisfy ourselves that the borrowed capital is in each case within the powers possessed. We do not find any instance of unauthorized borrowed capital, subject to remarks on overdrafts and temporary loans.

In all cases the borrowing powers granted to municipalities are conferred by statute, either under public general acts, by provisional order or by special act. In all the undertakings investigated the powers have been by special acts. The London County Council differs from all other public undertakings examined. It has to go to Parliament annually for a Money Act, and any powers granted, if not exercised during the year, require re-sanction in the

next act. All powers to borrow are granted for specific purposes only.

All grants of borrowing powers are by way of limitation, and the duty of seeing that the powers are not exceeded is placed with the Local Government Board, which exercises a strict control of such matters.

We have given in each schedule full particulars of the rate at which the various municipalities borrow money as compared with private undertakings. In all cases investigated the municipality is able to borrow money at a lower rate than private companies.

A very favorite method is to borrow for short periods on mortgage of the undertaking and of the general rate of the city. These loans are generally for periods varying from 3 to 10 years, and in some cases longer. They are repaid at the end of the period arranged with the lender either out of the sinking fund or out of other moneys borrowed to replace them; but if they are repaid out of sinking fund the amount may not be reborrowed.

Although the loans are for short periods, the sinking fund must be set aside to redeem the whole amount at the end of the time granted by statute. This does not preclude borrowing for short terms. These mortgages are issued and redeemed at par, and the interest paid is at the rate of the day. Most municipalities pay a commission to agents introducing such investors, usually at the rate of 1s. per cent. for each year the money is loaned. This is the case in several municipal undertakings examined, all of which are mentioned in the schedules. In the case of Liverpool the commission on issue of stock is included in the capital account of the electric lighting undertaking. In general, however, these commissions are charged to revenue account.

It is very unusual for a municipality to borrow unless on security except from the Bank.

The issuance of stock is very often adopted where the amount to be raised is large enough to enable a quotation to be obtained on the stock exchange.

As a general rule the borrowing powers granted by Parliament to municipalities provide for the redemption of the debt at par at the end of the sinking fund period, as defined in the special act under which the powers are granted.

In the case of Manchester gas undertaking and a few other municipal plants, Parliament some years ago sanctioned the issue of irredeemable stocks, but the sinking fund obligations relate only to the par value of the stocks. * * *

*Bank Overdrafts and Temporary Loans.* When dealing with the borrowing powers of municipalities, we have stated that they have not any power to borrow except such as is conferred by statute, and that municipalities rarely borrow except on security—and we have made an exception in the case of bank overdrafts and temporary loans. We would state that bank overdrafts by municipalities are viewed with disfavor by the Local Government Board.

On referring to the statements of liabilities of the undertakings, it will be seen that in 8 cases municipalities have such overdrafts. This may appear misleading unless we draw attention to the fact that in 6 of those cases the same municipality has cash to its credit in the bank on other accounts and that the subdivision is merely an accounting convenience in order to keep each fund distinct.

In the case of Leicester (gas) there is an overdraft on revenue account of £15,969, and in the case of Liverpool (electric) an overdraft of £204,244. In the case of St. Pancras (electric) the cash in the bank on reserve fund account is less than the overdrafts on capital and revenue accounts, but in all these cases we find that the municipality as a whole has money in the bank. Even then we would point out that Liverpool (electric) has borrowed £204,244 from the general funds of the municipality. * * *

We have not drawn any special attention to the bank overdrafts of private companies, all of which are fully set out in the statements of liabilities. The borrowing of money from a bank is within the powers of all the private companies investigated. * * *

*Repayment of Municipal Loan Debt, Sinking Fund, etc.* With very few exceptions (and this in the case of very old powers only) all loan capital borrowed by municipalities has to be repaid within the period prescribed by the special act authorizing the borrowing or allowed by the Local Government Board when giving sanction to the expenditure.

In all cases examined by the commission the revenue account has been charged with the repayment of a portion of the whole of the loan debt outstanding. This repayment may be either by an equal annual instalment of principal only, or by an equal annual instalment of principal and interest combined, or by means of a sinking fund.

All these methods are adopted in the municipal undertakings investigated by the commission. In the St. Pancras electric undertaking the municipality borrowed £10,000 from the London County Council, the repayment to be spread over a period of 50 years. They are repaying this at the rate of £200 per annum and paying each year interest upon the balance remaining unpaid. This is known as the instalment system, and involves a decreasing charge to revenue year by year. This municipality has also borrowed money from the London County Council and the Prudential Assurance Company, and is repaying these loans by equal annual instalments of principal and interest. This is known as the annuity system, and equalizes the charge to revenue over the whole period.

When either of these methods is adopted there is not any sinking fund required, and none exists in the case of the St. Pancras municipality, as the loan is repaid direct to the lender as and when the instalments are taken out of revenue. Where a sinking fund method is adopted (and this is generally the case in all other municipalities investigated) the revenue account of the undertaking is debited with such an equal annual instalment as will, with ac-

cumulated interest at the end of the period allowed, provide the amount of the loan in respect of which it is set aside. These instalments require to be invested either in outside securities or in the stocks of the municipality.

This sinking fund involves an equal annual charge to the revenue account during the whole period of the loan, made up of the annual instalment and the interest on the whole of the original loan. If any part of the sinking fund is applied in paying off loans, the interest upon the loan so redeemed has still to be charged to the revenue account and added to the sinking fund.

When the sinking fund is applied in redemption of part of the debt at a premium, such premium should not be paid out of the sinking fund, but charged against revenue. We find an instance of this in the Manchester gas undertaking in the case of the irredeemable stock already referred to. But if the sinking fund instalments are calculated upon the premium value of the loan, then the whole amount paid is properly chargeable against the sinking fund.

All municipalities in England have to make a very full return to the Local Government Board as to their loan debt and the provision which is being made for redemption thereof by means of sinking fund, etc. This return is very thoroughly checked by the Local Government Board, which requires the sinking funds to be made up to the calculated amount out of revenue where the interest arising from investments has fallen short of the estimated amount. In Scotland this return is made to the Secretary for Scotland, who exercises functions similar to those of the Local Government Board in England. In the year 1904 the Secretary for Scotland drew attention to a deficiency in the amount set aside for sinking fund by the Glasgow electric undertaking in 1902 and 1903, and the municipality accordingly made up the deficiency of £1305.10.6. out of revenue department.

Mr. Turner has had considerable experience in connection with municipal sinking funds and we can assure the Commission that the figures as given in the published accounts are absolutely reliable, apart altogether from the question of the audit of the accounts. We would also mention that it is quite impossible for any municipality to employ any part of its sinking fund in providing a working capital or in any manner other than its legitimate purpose, namely, the repayment of loan debt. Any part of the sinking fund not so applied must be represented either by cash in the bank or invested in outside securities, or where permitted by statute, invested in the authorized loans of the same municipality.

This question of the investment of sinking fund in the same municipality was frequently referred to when the members of the Commission were in England. And we would point out the following facts with reference thereto. In the case of three of the municipal undertakings investigated, we find that sinking funds are so invested. These undertakings are Leicester (gas) and Liverpool (tramways and electric lighting). In the case of Liverpool

the power to so supply the sinking fund in this manner is given under their special act of 1894.

The investment of sinking funds in this manner is not generally allowed under older acts, but Parliament has very often granted this power in recent acts. It should be borne in mind, however, that the sinking fund cannot be invested in any other department of the same municipality unless that department has obtained statutory powers to borrow the amount and is therefore under a statutory obligation to set aside out of revenue a sinking fund for its redemption. * * *

*Goodwill.* The only case in which we can ascertain the exact amount paid by either a private or municipal undertaking for "goodwill" is that of the London United Tramways, where £600,000 was paid under this head and satisfied by the issue of a similar amount of ordinary capital stock.

We are informed that the price paid in the following purchases included a sum for goodwill:

*Municipal Undertakings.* Tramways, Liverpool, London County Council. Electric, Liverpool.

*Private Undertakings.* None, except as above. The Birmingham gas plant was purchased by the municipality from a previously existent private company at a price which may have included a sum for goodwill, but we are unable to state whether any such item was included or not, as the officials are unable to subdivide the amount appearing as capital outlay.

The following undertakings having been commenced by the municipalities, and not purchased from private companies, do not include any item for goodwill in their capital outlay: Municipal Gas, Manchester. Tramways, Glasgow, Manchester. Electric. Glasgow, Manchester, St. Pancras.

Under this head we would draw attention to the case of Glasgow municipal gas department, where the original private company was bought out by the issue of municipal annuities. The premium on these annuities is dealt with elsewhere in this report and represents the goodwill paid for the purchase of the undertaking. The Leicester municipal gas undertaking paid a total premium of £256,651, which represents the goodwill paid for the purchase. * * *

*Investments in Other Companies.* Several of the private undertakings examined have invested part of their capital in subsidiary companies. The Newcastle Gas Company has in conjunction with the local private water company erected a bridge over the River Tyne for carrying their mains. The South Metropolitan Gas Company has invested part of its funds in the purchase of a property in America, in order to obtain monazite sand for the construction of gas mantles. The Newcastle Electric Supply Company has invested considerable sums in other local electric distribution companies. The Central Electric Supply Company of London is owned entirely by the St. James and Westminster Companies. * * *

*Depreciation.* In the following remarks we have dealt separately with the practice which has been adopted by each undertaking investigated, and would summarize these remarks, as follows:

With regard to the obligation to write off depreciation against the revenue we would point out that this provision is not imposed upon any municipality by statute. The only case in which it was imposed was on a private undertaking, viz.: The City of London Electric Light Company under their Act of 1893, and in 1900 the company obtained a special act relieving them of this obligation. With regard to the actual practice on the part of the municipal undertakings examined, we find that it is usual to write off depreciation on such items as meters and stoves; but with regard to the main outlay the practice varies. Both the Glasgow and Birmingham municipalities charge depreciation to the revenue account at definite rates per cent. The Liverpool, Leicester and Manchester municipalities and the London County Council do not charge definite rates per cent. At St. Pancras it is not the practice to charge definite percentages, but the capital outlay has been reduced from time to time by round sums transferred from the surplus profits.

The capital outlay at Birmingham has been reduced by the depreciation written off and has also been adjusted from time to time by a valuation being made of the plant. At Glasgow the capital outlay appearing in the balance sheet is reduced by depreciation written off in the case of the gas and electric light undertakings, but we have ascertained the amount so written off and have included the capital outlay at the original cost and included the depreciation amongst the surplus funds on the liabilities side. In the case of the Glasgow tramways prior to the year under review the capital outlay was treated in the same way, but in that year a change was made, the outlay being included at cost and the depreciation being shown amongst the surplus funds.

In all cases of municipal undertakings surplus profits have been set aside to provide a renewals fund out of which renewals have been defrayed as and when they were made. In addition, the revenue account has been charged with special renewals in several cases, but in the majority of cases the maintenance charged is not divided as between ordinary maintenance and renewals.

The reason for the varying practice on the part of the above municipalities is found in the different opinions entertained as to whether depreciation should be charged against revenue account in addition to charging sinking fund instalments, which are in most cases created to repay the debt in the period which is fixed by Parliament and which is generally within the estimated life of the plant. With regard to percentages charged to the revenue account, we find that the practice varies considerably, and that the provision of depreciation has largely depended upon the actual profits of any particular year. In some cases we find that even where it is the practice to charge fixed percentages, in some years this has not been charged at all. We find further when the profits have been

large, in addition to charging these fixed percentages, the department has applied round sums out of its surplus profits and added them to the depreciation fund.

We find that none of the private gas undertakings examined has charged its revenue account with anything in respect of depreciation, except upon meters and stoves. The plant is maintained entirely out of revenue, and each year's revenue account is charged with renewals during the year. The capital outlay is maintained at cost and no depreciation funds are accumulated.

Similarly in the case of private tramway undertakings, no depreciation is charged to the revenue account. The capital outlay is maintained at the original cost and all renewals are charged to maintenance during the year in which they are made.

With regard to electric light companies, we have already referred to the City of London Company. In the following cases the revenue account is not charged with depreciation, and the capital outlay is maintained at the original cost, viz.: Newcastle Supply Company, Newcastle District Company, the Westminster Company and the Central of London Company. The St. James Company regularly charges the revenue account with fixed rates and deducts the same from the capital outlay shown in the balance sheet.

We find, however, that in all cases where depreciation is not written off the outlay at fixed rates per cent., the revenue account is charged with the provision of renewals funds, all of which are shown in the statements following.

The procedure adopted at Birmingham (gas) with regard to depreciation differs from that in any other plant investigated by the Commission. In this case the capital outlay account is debited with the total expenditure at the end of the previous year, to which is added the total outlay during the current year. At the end of each year, a deduction is made for "Buildings and Plant abandoned, Plant Transferred to Stock Account," and the difference shows the amount of capital outlay at the end of the year. In explanation of the amounts deducted the officials of the plant state that the value of buildings, plant, machinery and gas holders is depreciated each year and the values reviewed from time to time. These deductions from capital account are therefore in the nature of depreciation, and obsolete plant taken out at the depreciated value, and constitute a charge against the revenue account. In the published accounts of the plant they are not specifically shown as charges to revenue, but are included in the items of repairs, maintenance and renewal of works, etc. Birmingham appears to be the only plant investigated in which the revenue account is charged not only with the above items and with the sinking fund instalments, but in which a periodical valuation of the assets is made.

In the published accounts, Glasgow (gas) deducted the depreciation charged to revenue account from the total capital outlay, and the depreciated amount is included in the balance sheet. In the schedule, however, we have shown the capital outlay at the

original cost and have included on the liabilities side a depreciation fund as a surplus created out of revenue. During the year under review, depreciation has been deducted at the rate of 1¼ per cent. per annum, gas meters 6 per cent. per annum and gas stoves 10 per cent. per annum.

No deduction is made in respect of depreciation on the main gas undertaking of Leicester, but is charged in respect of meters and stoves. The municipality considers that the repayment of the debt by means of sinking fund and the proper maintenance of the works out of revenue take the place of the provision of depreciation.

*Manchester Gas.* As we have elsewhere mentioned, it was the custom prior to 1892 for the Manchester gas department to charge the revenue account with depreciation which was deducted from the capital outlay, but since that date this practice has been discontinued. The Manchester municipality takes the same position as Leicester and Liverpool with regard to this question.

Previous to the year ending 31st May, 1905, the tramways department of Glasgow treated the capital account in the same way as that of the gas department inasmuch as they deducted the depreciation charged to revenue account from the capital expenditure shown in the balance sheet. In May, 1905, the committee decided to issue the accounts in accordance with the standard form adopted for municipal tramways. In consequence of this decision the accounts of the tramway undertaking to May, 1905, show on the assets side of the balance sheet the full capital expenditure, and on the liabilities side the amount of the fund set aside to meet depreciation. This fund has been built up by annual contribution out of revenue at fixed rates per cent. and amounts to £177,637. In the case of permanent way the yearly contribution was at £450 (since increased to £500) per mile of single track; electric equipment, 3 1/3 per cent.; buildings and fixtures, 2½ per cent.; power station plant, 5 per cent.; cars and electrical equipment of same, machinery and tools, and miscellaneous equipment, 7½ per cent. These are the rates charged for the year ending 31st May, 1905. The rates for previous years can all be ascertained from the published accounts of the undertaking. In addition to these regular rates the undertaking has set aside a special depreciation fund which is arrived at by transferring round sums from the surplus revenue as profits allow. At 31st May, 1905, this special depreciation amounted to £68,500. The municipality has expended the sum of £287,036 on actual renewals out of the depreciation fund above created.

In the case of the Liverpool tramways the municipality has built up a reserve, renewal and depreciation account which at 31st December, 1904, had a balance to credit of £211,386.12.0. This is essentially a fund for the renewal of the undertaking and is drawn upon from time to time to defray the cost of such renewals. It is not the practice at Liverpool to write off depreciation in addition

to sinking fund, following the practice at Manchester and Leicester.

The revenue account of the London County Council tramways is not debited with any definite percentage annually for depreciation, but the County Council is setting aside surplus profits to create a reserve fund for renewals.

The same practice prevails in the tramway undertaking of Manchester as in the gas and electric undertakings. No definite percentage is set aside annually, but surplus profits are transferred to a renewal and depreciation fund, out of which sums are from time to time taken as renewals are carried out.

The revenue account of the Dublin tramways is not charged with any definite percentages each year. The alterations and improvements to the track have been from time to time charged to revenue account as and when made.

It is not the practice of the London United Tramways Company to charge the revenue account with any definite rates of depreciation, which is provided for by charging all renewals to the year's revenue account as and when made.

It is not the practice of the Norwich Tramways Company to charge the revenue account with any definite rates of depreciation, which is provided for by charging all renewals to the year's revenue account as and when made.

The practice of the Glasgow electricity department has been to charge the revenue account with definite rates per cent. on the capital outlay. These amounts have been deducted from the outlay shown in the balance sheet. In the schedule, however, we have included the capital outlay at the original cost, and have added on the liabilities side a credit to the depreciation fund of £140,700. This figure is taken from the published accounts for the year ended 31st May, 1905, and is the total of the amounts deducted as shown by those accounts. The officials of the department inform us that the total amount set aside out of revenue for depreciation amounts to £235,861, the difference of £95,161 being accounted for by capital outlay, which has been entirely written off and does not now appear in the assets. With regard to the actual rates written off these have varied considerably, but have remained constant for the last three years. In 1901 no depreciation was written off and in 1902 only a small amount. Several items have been entirely written off.

The revenue account of the Liverpool electricity department is not debited with any fixed percentages for depreciation, but surplus profits have been applied in setting aside a renewals fund which now amounts to £68,971. Out of this fund is defrayed the actual cost of renewals to buildings, machinery, mains and accumulators. This is in addition to the ordinary repairs charged to the revenue account.

As in the other departments of Manchester, it is not the practice of the electricity department to set aside annually any fixed percentages for depreciation. They are creating a fund to provide for further renewals by transfer of surplus profits. In

addition to debiting the revenue account with ordinary current repairs, the revenue account to March, 1905, has been charged with £13,328 for special renewals at the generating and distributing stations.

It is not the practice of St. Pancras to charge the revenue account with fixed percentages in respect of depreciation. During the year ended March, 1906, the revenue account was debited with depreciation on stores and tools, and during previous years the surplus profits have been applied in writing off depreciation on accumulators, meters, machinery, boilers and other works which have been deducted from the capital outlay.

The provisions with regard to depreciation in the case of the City of London Company are somewhat unusual. Under the special act of 1893, the company was compelled to set aside a fixed percentage on their capital outlay each year, in respect of depreciation, and the local authorities of the City of London had the right under the contracts to inspect the accounts of the company in order to satisfy themselves that the regulations with respect to the statutory depreciation and reserve funds had been complied with. The municipality availed itself of these rights to inspect the accounts of the company up to thirty-first of December, 1897. The directors felt that they should not have imposed upon them any larger obligations than are imposed on other companies who have to keep their accounts in the form required by the Board of Trade, and they applied to Parliament and obtained a special act leaving the provision of depreciation to the discretion of the directors. In the year ending 31st December, 1900, no depreciation was set aside. At that date the whole of the depreciation and reserve funds were consolidated and since that time no definite sums have been charged to revenue account by way of percentage, but lump sums have been transferred out of the disposal profits and credited to the depreciation and reserve funds. * * *

The directors of the Newcastle Supply Company have not charged the profit and loss account with any definite percentages on the outlay. They have created a depreciation fund which now stands at £156,000. Part of this fund, viz.: £37,500, has been created out of premiums received on shares and the balance out of surplus profits. The company informs us that this fund is more than sufficient to meet any obsolete plant, which is estimated at £117,000. The directors in their report to the shareholders state that depreciation will be set aside when the works are completed and in full revenue bearing condition.

In the case of the Newcastle District Company also, the company has not set aside any fixed percentages by way of depreciation. They have, however, accumulated a depreciation fund amounting to £7,500, of which £7,000 was contributed in the years from 1894 to 1899; and in 1902, £500. Since 1902 the Close and Newburn stations have been purchased, built and equipped and the greater part of the outlay being in respect of new works, the depreciation has been practically nothing.

The St. James Company regularly charges the revenue account with depreciation at fixed rates per cent., which amounts are deducted from the capital outlay shown in the balance sheet. The rates deducted are 1 per cent. on buildings, and an average of 6 per cent. on the remaining outlay. The amounts deducted are as follows:

| | |
|---|---|
| Year ending 31st December, 1905 | £14,794 |
| Six years ending 1905 | 84,500 |
| From the commencement of the undertaking to the end of 1905 | ..... |

The Westminster Company has created a depreciation fund, which now stands at £162,755; by charging against the revenue in each year certain fixed percentages on the capital outlay. During the six years ending 1905, the above transfers from revenue account have amounted to £149,602. This fund has been debited with expenditure in the nature of replacements, amounting during the past six years to £47,127, and we are informed that the whole of the obsolete plant has been provided for in this manner. All the ordinary repairs, maintenance and renewals are charged to revenue account. This company maintains the capital outlay in the balance sheet at the original cost and does not deduct any part of the depreciation from such outlay.

The Central Electric Company does not charge the revenue account with any fixed percentages in respect of depreciation. They have accumulated a depreciation fund of £6,300, which has been taken out of surplus profits. * * *

*Revenue Account.* We find that there is a considerable difference in practice as to what items shall be included under this head, and we are unable to state that in all cases, especially in those of municipal plants, those items charged to revenue are strictly in the nature of revenue items, and that they do not include extensions which might properly be considered as chargeable to capital account. The time at our disposal was not sufficient to enable us to make an exhaustive examination in each case, and we have accordingly accepted the figures as published by each undertaking.

As we have already pointed out, the accounts of each class of undertakings are prepared on a fairly uniform basis, so far as regards the ultimate revenue account, profit and loss account and balance sheet, but there is a striking absence of any uniform system of analysis. To be effective, the prescribed system should begin with the analysis of the expenditures in a manner similar to that adopted in the standard forms used in America.

*Credits to Revenue Account.* The same want of uniformity in analysis which we have referred to under the heading of "expenditure" is met with under the head of "receipts," and this has rendered it impossible for us to fill up the schedule in the form in which it is drawn. We will refer to each class of undertakings separately:

As to the gas undertakings, the schedule asks for a very minute subdivision of the sales of gas for various purposes.

But in very few instances have we been able to fill this up with any completeness and we have not been able to obtain information which would enable us to prepare a uniform statement in each case on uniform lines, although differing from the schedule. We must therefore refer the Commission to the information which we have been able to obtain in each case as shown by the schedule.

In the case of electric light plants also the same want of uniformity exists and we must in these cases also refer the Commission to the detailed information which we have been able to obtain. * * *

*Reserve Funds.* We have paid considerable attention to the question of reserve funds. The points we have had in mind are:

(1) That the schedule should show the exact amount of reserves which have been set aside by each undertaking.
(2) That it should also show how these reserves have been built up.
    (a) Out of profits.
    (b) Out of premiums on shares.
    (c) From other sources.
(3) The manner in which the funds have been applied:
    (a) As working capital.
    (b) In extension of works.
    (c) Invested in specific securities.
(4) In cases where the funds are invested how the income from the investments is applied.
(5) Whether any part of the fund has been used and if so to what extent and for what purposes.

We propose to answer all these questions in the following remarks. We have not been able to ascertain in all cases the limits imposed, but we believe that the Commission have copies of all statutory and other documents dealing with the question, and that much of this information will be contained in the replies to Schedule I. We have, however, in the following remarks given all the information which we have.

In the case of municipalities the amount which they may set aside by way of reserve is often limited by the special acts governing the undertaking and is very often at the discretion of the local authority, as to whether any fund should be set aside at all. In the case of private companies any limit in this respect is usually imposed by the articles of association and the clause governing the same is usually under the heading "powers of directors."

Birmingham has accumulated a reserve fund of £100,000, which has been accumulated out of the profits of the undertaking after making considerable contributions in aid of the general rate of the city. It is specifically invested in other departments of the municipality and brings in a clear 4 per cent. without deduction of income tax. This resulting interest, £4,000 per annum, is not included as part of the revenue of the gas undertaking, but is applied directly in aid of the improvement rate of the city. In addition to the foregoing reserve the municipality has accumulated

a fund out of profits of £3,000 to cover any possible liability under the Forged Transfers Act of 1891. This undertaking has no fund of unapplied profits.

The Glasgow gas undertaking has accumulated a large fund amounting to £1,346,657 out of revenue to provide for depreciation, and it not being the practice to apply any part of the profits in aid of the general rate of the city, they have only provided a contingency fund of £19,289. This contingency fund has been built up out of surplus profits, and is not specifically invested, but forms part of the working capital of the undertaking. In addition to the above reserves this undertaking has unapplied profits amounting to £21,026.

The Leicester accounts show that they have a reserve fund of £79,828. This represents the reserve fund of the old company, existing at the time of the purchase in 1878, which is invested in the undertaking. The municipality has created out of profits a further reserve fund of £8,000 which is invested in the funds of the corporation. The resulting income is credited to the net revenue account. The limit to the reserve which may be accumulated is £50,000 under the Act of 1878. The undertaking does not carry forward any unapplied profits. The balance of revenue for the year amounts to £43,467, and following the usual practice, this amount will be applied in aid of rate. We have in all other cases of this kind treated the balance of profit as if it had been actually applied in aid of rate and regret that we have not done so in this case.

The Manchester gas works have accumulated a reserve fund of £147,608. This amount has been provided out of surplus revenue after setting aside considerable sums in aid of the general rate of the city. The amount is not specifically invested, but has been used in providing the working capital of the department. The revenue account is not charged with any interest for the use of this fund. The department does not carry forward any unapplied profits, the practice being to credit the whole of the unapplied profits to reserve fund at the end of each year. * * *

The reserve fund of the Newcastle gas company stands at £60,000, being the limit allowed by statute. It is not specifically invested, but is represented by the general assets of the company. In addition to the above the company has carried forward unapplied profits to the amount of £17,537.

The Sheffield gas company has power under its special act to accumulate out of profits a reserve fund equal to 10 per cent. of the share capital. This amount has now been accumulated, and is invested in outside securities, the income upon which is credited to the current year's net revenue account. In addition to the reserve fund the company has accumulated a surplus of undivided profits amounting to £83,972 to provide for any rise in the price of coal and to keep the price of gas at its present level, although this is primarily the function of the reserve fund proper. The company has a further reserve fund accumulated out of premiums

received on capital issued, amounting to £19,706. The company is not empowered to pay dividends upon this sum, and there is not any obligation to repay it at any time or upon the winding up of the company. In the latter event it would be represented by the general surplus assets of the company, and be distributed pro rata amongst the whole of the shareholders.

The South Metropolitan gas company has accumulated a reserve fund of £174,305 which has been provided out of surplus profits and also increased by interest received on specific investments representing the fund. At the close of 1905 this fund was all specifically invested with the exception of £73,932. This company has also accumulated a renewal fund for redemption of leasehold properties which stands at £23,962. This fund has been created out of revenue by annual transfers which for the past six years have been at the rate of £300 per annum. It has also been increased by interest on the specific investments representing the fund and has been from time to time applied in purchasing leases of properties occupied by the company. The amount of the fund uninvested at December 31, 1905, was £2,525. The company has also out of profits accumulated an "insurance fund" which is really an ordinary reserve fund which may be set aside according to the special acts. An explanation of this fund is given in the report to the shareholders of June, 1903. It is to meet any extraordinary claim, demand or charge which may at any time arise against or fall upon the company from accidents, strikes or other circumstances which in the opinion of the auditors due care and management could not have prevented. The amount to credit is £105,189, which has been provided by annual contributions from revenue and increased by interest on the specific investments representing the fund. The whole of this fund is specifically invested with the exception of £3,382. In addition the company has carried forward undivided profits amounting to £5,683.

(For a full analysis of the Glasgow tramways reserve funds, see schedule * * *)

As to the Liverpool tramways, we have already pointed out that this municipality has accumulated a reserve and depreciation fund, amounting to £211,387. Of this amount £100,000 has been invested on loan to the Water Committee of the municipality. The remainder of the fund is utilized as working capital or is in the bank. Considerable sums have from time to time been expended for purposes for which the fund was formed. In addition to the above reserve the municipality has accumulated an insurance fund of £1,659.

The southern system of the London County Council tramways has accumulated out of profits a renewals reserve fund of £66,607. This fund is invested to the extent of £31,541 in 3 per cent. consolidated stock of the London County Council. The interest received on this investment is credited to the fund, which is also increased by the bank interest on the amount for the time uninvested. The fund has been drawn upon in 1903-4 to the extent

of £5,257, which has been used in repaying part of the debt outstanding in respect of the omnibus services. It has not been otherwise drawn upon. In addition to the above there is an unappropriated balance of profit amounting to £7,054.

The Manchester tramways has accumulated a renewals and depreciation fund amounting to £185,086, which has been provided by annual transfers from the revenue accounts. It is not specifically invested, but is used as working capital. This fund has been drawn upon from time to time for renewals of permanent way and other purposes for which the fund was formed.

(The data for private tramway undertakings are given in the schedules * * *)

The Liverpool electricity department has set aside out of the surplus revenue of the undertaking a reserve fund of.. £95,617
and a renewals fund of..... 68,971

Total ..... £164,588
Of this sum the municipality has specifically invested in government securities..... £26,471

Leaving uninvested ..... £138,117

The renewals fund has been from time to time debited with the actual cost of renewals. During 1905 the amount so expended was £3,917.

(The data for the other municipal electric plants are given in the schedules * * *)

*City of London Company.* We have already referred fully in the previous part of this report to the provision of a depreciation fund of £153,379. Up to the year 1900 this company was compelled by statute to set aside certain definite rates of depreciation, which obligation was removed by special act in that year. Following the removal of this obligation the company re-arranged and consolidated the whole of its reserve funds which now stand as follows:

Reserve account for capital purposes..... £40,941
Reserve account for depreciation purposes..... 153,379
Leasehold redemption ..... 2,000
Debenture stock premium redemption account..... 53,331

Total ..... £249,651
Company has invested specifically..... £59,303

Leaving ..... £190,348

which is invested in outlay on works. The dividends on the above investments are credited to the net revenue account. Full details of these funds are contained in the schedule, but are too long for reproduction in this report.

The funds have been built up by transfers from revenue account, premiums received on issue of shares and debentures, and sales of old plant. These funds have from time to time been debited with ordinary current repairs and maintenance up to 1901, special outlay on replacements, loss on sale of investments, costs of alterations in connection with change of pressure, amount written off capital outlay for obsolete plant, expenses of issue of shares, parliamentary costs of opposing bills in Parliament. In addition to the above a transfer has been made to the debenture stock redemption account. This latter fund is in respect of the first debenture stock of the company, of which they have issued £400,000. This stock is redeemable at 125 per cent., which represents a premium of £100,000. The account was opened in 1900, and since that date the revenue account has been charged with interest on the balance standing to the credit of the fund, which has been increased by such interest. There is not any fixed date for the redemption of the debenture stock, but it is redeemable at the option of the company at six months notice after 1910. We consider that this provision is ample. In addition to the above reserves the company has a bad debt reserve of £1,400 and has carried forward to next account £22,235, being the balance of undivided profits.

(The other companies are covered in the schedules * * *)

In conclusion we would express our thanks to the officials of the various municipal and private undertakings who have so kindly furnished us with copies of documents and other information and without whose help we could not have obtained all the information which we have.

We have been very pleased to have been engaged in this investigation and hope that the result will be satisfactory to the members of the Commission and to the National Civic Federation.

We are,
Your obedient Servants,

R. C. JAMES,
Accountant,
Philadelphia, U. S. A.

E. HARTLEY TURNER,
Chartered Accountant,
Manchester, England.

# MEETING OF COMMITTEE ON INVESTIGATION

## At St. Ermin's Hotel, London, July 3, 1906

## To Hear Leading Representatives of the Municipal Ownership Movement in Great Britain

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Prof Frank J. Goodnow was selected to act as Chairman, and the following gentlemen were heard:

Messrs. T. McKINNON WOOD, M. P., L. C. C., Leader of the Progressive Party in the Council.

J. ALLEN BAKER, M. P., L. C. C., Chairman of the Highway Committee in charge of the L. C. C. Tramways, etc.

ROBERT DONALD, Editor of the "Municipal Journal," and the "Municipal Year Book," and Managing Editor of the "London Daily Chronicle."

G. W. SPENCER HAWES, Member of the Institute of Electrical Engineers.

The following is a condensed report of the hearing, as nearly verbatim as possible:

T. McKINNON WOOD: People sometimes look on municipal undertakings as mere matters of making money, and thereby reducing rates, but that is a narrow and inadequate way of looking at the question. We have a further object. Take the tramways. If a private company goes into the tramway business it is obviously their duty to the shareholders to get a profitable line and not go a mile further because it would help the housing problem or be convenient to the people. Then we have had great complications in London arising from the fact that the matter has been dealt with in a piecemeal way by separate companies, each monopolizing certain tracks. There has been no coherent scheme running through the transportation system. A municipal authority like the London County Council can consider these larger questions. They can say: It is true, we are not going to make a profit out of this particular line, but it will feed one of our great routes, or open up a great piece of land where the working classes can house themselves in comfortable and airy homes, instead of being penned up in monster barrack erections in the heart of the city. The opponents of municipal ownership have not proved their case when they say the municipal authority is not making much money out of the tramways. We regard it as much an advantage to carry people at halfpenny and penny fares as if we made another 1 per cent. out of the venture.

We regard it as a great advantage to work the men humanely, 6 days a week instead of working them 7 days a week or at any rate 20 days out of 21, as some of the old companies did—as great an advantage as 1 per cent. more profit—and we regard it as a paramount advantage that we may use the control of the tramways system to develop all the resources of London, and to subserve all the interests of a great commercial and residential town.

People often put the figures of municipal enterprise in a very misleading and unfair way by omitting the item of sinking fund. A municipal authority in this country is obliged to consult—in the case of London, the Treasury, and in case of other towns, the Local Government Board—as to the term of years over which it may spread any loan for capital expenditure. Take our tramways for example; there is one term of 60 years for land and buildings, which of course will last a great deal longer than that, with shorter terms on other items, making an average of about 5 and 20 years. The effect is that in 25 years a very great portion of our tramway debt will be paid off and we shall have unencumbered property belonging to the rate-payers of London. This is done by the sinking fund, to which no credit is given in the criticisms made by opponents of municipal enterprise.

We have spent between four and five millions on our tramways. We are still in process of transition. We have only this year got possession of the northern part of our system. The southern lines are partly electrified. We are changing horse lines into electric lines, and under these circumstances you cannot expect to get the best results from the system, as the traffic is interfered with and the receipts are stopped on part of the lines.

The total capital is £4,818,000. This includes the purchase money. The sinking fund is about £450,000. Of the £4,818,000 capital, we have paid off £607,000, and of that £607,000 about £450,000 is sinking fund. We have also put a sum of £290,000 to relief of rates.

Although we have low fares, as a half-penny and a penny—we carry millions of passengers at a half-penny for short distances—we still earn over a shilling a mile on our tramways, and when we have completed our generating station we shall be able to operate the tramways for about 7d. per mile, leaving 5d. for interest and sinking fund. It has been costing us about 7¾d. to operate the lines, because we have had to buy electricity from other people.

The receipts which we estimated have been fully realized. The margin we estimated at 4d. has been in fact 4½d., and has gone £30,000 beyond our estimates during the last two years.

Let me give you a concrete comparison between a private company in London and the County Council tramways, taking them on the same basis exactly. The London County Council Southern Tramways for the year ending 31st March, 1905: Capital expended, £2,600,000; profit on working, £203,500; percentage of profit to capital expended, 7.6 per cent. The London United Tramways Company, year to 31st December, 1904: Capital,

£2,905,000; profit on working, £120,000; percentage of profit to capital expended, 4.1 per cent. Those are the figures given by the Official Comptroller, and I assure you, you may take them as absolutely correct.

Mr. WALTON CLARK: I should like to ask Mr. Wood one question. The statement has been made to us that the London United has had to pay large sums for way-leaves and consents. If then their capitalization is so greatly enlarged by these way-leave charges, is the comparison you made quite a fair one, assuming that the London County Council has not been pledged to pay large amounts for widening the streets and for way leaves?

Mr. WOOD: As a matter of fact the London County Council has paid much more than the United Tramway has for widening the streets.

Mr. WALTON CLARK: What is the principle upon which the London County Council Tramways Department is charged with the expense of street widening?

Mr. WOOD: It depends first of all upon whether the widening is necessitated by the tramway. The Local Authority is expected to pay something toward the cost of a local improvement, because it is of advantage to other classes of traffic, and the rule that has usually been adopted is that one-third is paid by the local authority, one-third by the Improvements Account, and one-third by the Tramways Account.

Mr. WALTON CLARK: There is one point about the London United and the County Council that ought to be brought out. The County Council has two millions capital which represents the horse cars. They introduced electric traction on an old system, and therefore they have this dead capital. The London United lines are nearly all new. Therefore they have no dead capital or horse lines.

Mr. BAKER: The dead capital or excess of capital over structural values in case of the London United, infinitely exceeds the dead capital in the Council tramways.

Mr. WOOD: It is said that municipalities often obtain powers and do not use them. That is a very reckless assertion. For one case where the municipalities obtain powers and do not use them, there are a hundred cases and very probably more in which companies obtain powers and do not use them. The reason is obvious. A municipality has no difficulty in raising money. But companies having obtained powers fail to use them because they cannot raise the money. You have lines of tube railways—and when they have the powers they cannot raise the capital. Then they have to come to Parliament for an extension of time. But nobody else can go in even if they can find the money, as the line has been monopolized. That is one reason why it should not be left to private companies.

To show the difference between the horse cars and the electric trams—from Greenwich to the Bridge, 1901-02, we were carrying 23 million passengers and our receipts were £98,490; in 1905-06, we carried 372,259,000 passengers, and our receipts were £169,000.

Mr. WALTON CLARK: You run cars for working men at 1d., early hours, and you carry them any distance for a penny, don't you?

Mr. WOOD: Not any distance.

Mr. WALTON CLARK: Does the London United do anything of that sort?

Mr. BAKER: In their franchises they are pledged to run a certain number of workmen's cars at cheap fares at an early hour in the morning, but they run a limited number compared with those that we run.

I might enlarge the comparison which Mr. Wood has forcibly put before you. He gave you the capital expended and the percentage of profits, 7.6 for the London County Council, and 4.1 for the London United. But he did not tell you that they have their own generating station, and that they are therefore at a very great advantage as compared with us in that respect. The cost of power to us, purchased from four companies, was 2.78d. per car-mile. And when we are working from Greenwich it is estimated that we can produce it at 1.4d. per car-mile. That makes 1.38d. per car-mile advantage they have as compared with us in the generation of power. If we had been producing our own power as they are doing, it would have meant an additional £67,579 of earned profit on the twelve million car-miles run, and would have brought our 7.6 per cent. up to about 10 per cent.

Mr. WALTON CLARK: You pay more for power and yet run much more cheaply. What is it that they pay more for than you do?

Mr. BAKER: A provisional order in the hands of a company represents anything from £30,000 up. Sir Clifton Robinson of the London United is always complaining of being held up by the local authorities and cheated, but he has walked away with a million pounds in a few years.

Mr. WALTON CLARK: The point is that they have a large capitalization.

A VISITOR: With small tangible assets.

Mr. WALTON CLARK: Are they wasting material and energy? Do you think they are running their cars as cheaply as you run yours per car-mile?

Mr. WOOD: I am not able to say, as they do not publish their accounts in the detailed way we do.

Prof. PARSONS: May I ask whether the regions over which the two systems operate are different in some way, so that you get a much larger number of passengers per car-mile than they do?

Mr. BAKER: That is a very fair question, certainly. We have the denser population and earn slightly more per car-mile. But there is another point which I think an important one and which Mr. Wood did not bring out. On the 183 millions of passengers we carried in 1905, the average fare—one-third or about sixty millions roughly being half-penny fares—per passenger upon our lines was .97 of a penny—that is just under 2 cents.

Mr. WALTON CLARK: The receipts just under a penny per car-mile or per passenger-mile?

Mr. BAKER: , No. We are speaking now irrespectively of distance, taking the number of passengers carried and what each one paid as an average fare. Going up to 2½d. or 3d. or 4d. on our longest distances. Against our .97 of a penny the London United was 1.47d. for the year ending December 31, 1904. The difference is exactly a half-penny, so their charges per passenger are fifty per cent. more than ours. If we had carried passengers on the same principle as to charges, and received the average fare that they received, the ½d. more per passenger would have amounted to no less a sum than £382,000.

Mr. WALTON CLARK: I suppose it depends on the distances carried.

Mr. BAKER: It does. But the fact still remains that we give the 183 million persons who use our tramways, a money advantage of £382,000.

Mr. WALTON CLARK: If you carry them the same distance; but if you have the half-penny fares on short distances, the probabilities are that they carry each individual passenger farther than you do on the average.

Mr. BAKER: I do not know whether that could be maintained.

Mr. WALTON CLARK: I think it is bound to follow, otherwise I do not see how your half-penny fares get your number of passengers.

Mr. HEALY: It has been stated that 30 years ago men did not take up public work in London as they do to-day. How do you account for the men coming to the front to take up this work and give all their time to it as they do now?

Mr. WOOD: You see, 17 years ago for the first time an elected central authority was created in London. Before that we had about fifty Vestries and the City Corporation, which only represented one square mile in the populous part of London. Members were delegated from these local bodies to make a Board of Works, which had limited powers. Up to that time there was no great central authority for whom all the people of London could vote and none who could speak for them; that is the reason that you did not get the same attention to London business.

Dr. MALTBIE: Mr. Wood, you said that the Local Authorities could not get the provisional orders, then keep them and shut out companies from coming into the area. Now, in the case of electric lighting, what was to prevent a Local Authority getting a provisional order, authorizing it to establish an electric lighting plant, and then simply act out the dog-in-the-manger policy of shutting out any company from coming in.

Mr. WOOD: As a rule powers sanctioned by Parliament are only sanctioned for a limited time; if the work is not carried out in a certain number of years, one or two years, the concession will be cancelled.

Mr. HAWES: The number of streets which are specified in provisional orders must be supplied with mains within a period of two years, otherwise the Board of Trade has the right to revoke the order.

Mr. DONALD: There are cases where you find no companies coming forward to do the work, because it would not be profitable.

Mr. HAWES: In the first place, a very large proportion of the provisional orders that have not been carried out relate to the past two years. There are a few relating to an earlier period, and they are for very small towns which do not provide a productive field of electric lighting yet. Also, in some cases, these small District Councils get an electric lighting provisional order under the supposition that the electric lighting bulk supply companies are going to give them a cheap supply in bulk and then they cannot get it and consequently the powers remain unused. This explanation covers all the municipal electric lighting orders which have not been carried out.

Mr. WOOD: The big towns, like London and Manchester, are not likely to go into a thing of that sort without having made up their minds to carry it through, but it constantly happens on a large scale with companies.

Dr. MALTBIE: What if it is not floated?

Mr. WOOD: If a syndicate getting rights for the purpose of floating a company, fails to float it, and keeps the powers to the end of the time, hoping to sell it, anyone else can get the business.

Dr. MALTBIE: Has the Board of Trade taken away from a Local Authority that has not used its powers the right to use them, or granted authority to a company to use them after the time has expired?

Mr. WOOD: Yes, they have in a number of cases where the Local Authority has not shown the Board of Trade that there has been a reasonable prospect of their carrying out the works promptly.

Mr. HAWES: The Board of Trade always asks the Authority what it intends to do, and it sends up representations to the Board. If they are not legitimate ones, the Board of Trade over-rides them, and the order is that we have no authority after a certain day. Just the same with companies; there are a good number of them who have not made any attempt to carry out their orders.

Mr. DONALD: You heard Mr. Wood say that London did not have good government years ago; well, Mr. Wood and Mr. Baker were the type of men who came forward to give us better government. One reason why London is not better governed to-day, and that municipal enterprise is not further advanced, is because during all that period those who have been working for progress have had to give one-half of their energy to fight companies who have been wire-pulling and undermining honesty of public life and everything else, and I want to point out to you that wherever you have a franchise company you have the elements of corruption. You have a splendid example in the tramways. In the early elections of the County Council, we had the telephone

company (circularizing all its shareholders), the gas companies and the electric lighting companies—these vast corporations with their thousands of shareholders, all operating against the municipality and getting men on the Council. The result was that this Council got elected even. That level was not enough; the companies wanted one on their side, and when it came to the question of the County Council municipalizing the tramways as they had a right to do, there was a terrific fight, and the great Tramway Company paid an impecunious labor man to vote against his convictions. The cash value could not have been a thousand pounds—the cash value to London has been half a million, for this delayed the electrification of the tramways for seven years—that is the result.

Mr. MOFFETT: Was this man convicted of bribery?

Mr. DONALD: No, he was a labor representative. Every labor man in this country would vote for municipal ownership. At the last critical moment the vote was transferred. He was ostracized and a few months afterwards became a saloon-keeper. Wherever you find a company in municipal life in England you find a little bit of corruption in its business. A tramway Company goes into Norwich; I take Norwich because you have been there. There is a continental financier on it, with no local interest whatever in Norwich. They say: "Who can we get hold of in this city to work our game?" They get a member of the Council; there is a member of the City Council of Norwich on the Board of that Tramway Company, and wherever you go where these companies are operating, you find a member of the Board on the municipality. Take the company that is owned by Mr. Garcke. The solicitor to that company is the Town Clerk. Why did he select that particular gentleman? Not because of his legal ability, but because he would suit their interests. Wherever you find a company you have this. Again I say it is absolutely impossible for a man to serve the community honestly and to serve the company honestly. Therefore if you want to establish absolutely pure government in any city, you must get rid of the sources of corruption. The sources of corruption in London and in England have been the private corporations. Since we are rid of the Water Company in London it has been a tremendous relief for the London County Council, and they have more energy to work for other things. Wherever you have a company it furthers its interests by getting somebody in the municipality to work for it.

Mr. MOFFETT: You speak of the companies taking part in a very practical way in politics for the purpose of corrupting them. Specifically you said that they used this influence to resist municipal ownership. Now would you say that they used their political influence in this or in any other way to accomplish any other purpose?

Mr. DONALD: No, only to keep what they had. You will find that in the elections around London it is very difficult to get men to come forward, but if a company pays them, there is no diffi-

culty. If they get hold of a man who would not mind being paid, he comes forward as one of the public candidates, but he advocates the Company's interests. You will find it everywhere, and we in this country were not able to get a city purely governed until we had gotten rid of the companies.

Prof. BEMIS: It has been suggested to us that municipal trading diverted the statesmanship and energies of the Council to the neglect of other things more important, by which I suppose reference was made to education, sanitation and various matters of social amelioration.

Mr. DONALD: That cannot possibly be. There is no authority in this country more energetic in promoting municipal ownership than the London County Council, and it is absolutely unquestioned that no authority has maintained a higher standard of park management, of polytechnic management, of sanitary management and everything else that is outside companies. The same thing happens in other cities.

Mr. HEALY: We have been told that the municipalities have been over-paying their employees and that they have handled the taxpayers' money recklessly.

Mr. DONALD: The municipality only aspires to be a model employer. It does not want to be better than the best outside employers. I am quite sure that Mr. Baker in his own business pays his own men better than the County Council men are paid, or equally well, because Mr. Baker is a model employer. The London County Council has done a little better by employees in the so-called unskilled lines than has other Authorities.

Mr. HEALY: You do not think there is any fear in regard to municipal trading that when the labor men get more powerful in the Councils they will drive wages up out of all proportion to what wages are now?

Mr. DONALD: No. I think it is impossible. Direct representatives of labor must be limited in municipal work, because municipal work is very hard and it takes up much time. It will take Mr. Baker 8 hours a day. There are no labor men who can attend to the work. You could get a few trade union officials and they might pay a man or two, but they would not have the ability nor the time to do the work. Labor men in this country have not aspired at all to run a municipality. As to driving wages up to an unreasonable level, I think the working people would stop that. They are not going to have a preferential class of wage earners to get more wages than they. They would vote against it and every taxpayer would vote against it.

Mr. BAKER: Sometimes on Committees where there were two or three labor men, a suggestion might be made that possibly certain men were not being sufficiently well paid. Another labor man there would say: "This is the trade union rate; we cannot go against our own principle." The trade union rate, that is, the rate mutually established between outside employers and the men, is the one that is adopted by the London City Council. Of course it

goes without saying that trade union rates will always be fixed by the great private industries of the country rather than by a municipality. I think that danger is a very small one.

Prof. PARSONS: A suggestion has been made that possibly or probably municipal ownership may injure labor by interfering with the unions—breaking up the unions—making the men so well satisfied that they will not want anything to do with the labor movement and so injure organized labor.

Mr. DONALD: I think that extremely improbable.

Mr. MOFFETT: Your suggestion is that men do not seek to obtain wages beyond the union rate, which is what the men call a fair rate between employee and employer. Now with regard to their output: take, for instance, the case of a bricklayer. Will a bricklayer employed by the London County Council lay as many bricks for a day's work as he does for a private employer who pays the same wages?

Mr. BAKER: I think generally speaking, that he will, on the same class of work. Of course the London County Council in its buildings, like fire brigade stations and other buildings that are to be of a lasting character, some of them having considerable architectural beauty, have established a standard of excellence to justify not only the period for repaying the capital cost of these buildings in the sixty years that is allowed; but when they are constructing buildings, whether model dwellings for housing the working people or fire brigade stations, whatever these buildings are, they are put up with the view of lasting not only 60 years but twice that, and the standard of material and of workmanship is very high as compared with what is known in London as "jerry building"—getting through a lot of cheap buildings for a speculative purpose to sell as a builder would do, perhaps two or three months after they are built.

Mr. DONALD: The County Council does its work too well. It builds to last 200 years. I hope that before 200 years have passed there will be a different class of dwelling from these high tenements of to-day.

Mr. MOFFETT: You say that in the same class of work a man will lay as many bricks as for outside contractors. Is the case typical of municipal employees?

Mr. BAKER: It is practically the rule laid down by the trades union and that has prevailed for a similar class of work whether by an outside employer or by the County Council.

Mr. MOFFETT: Suppose you had one hundred men to put in an extension of sewers, an odd job, and employment temporary, how would you set about hiring these men? Do you take them from some list or is preference given to veterans, or are they recommended to you by some one having a peculiar interest in the Corporation or in its projects?

Mr. BAKER: The foreman who is engaged to carry out work of that kind is made responsible to his works manager, and he has to see the work well done. There is no preferential list whatever;

the men are taken on and discharged as they are required. They may or may not be local men. Of course, other things being equal, the local man is preferred. But there is no appeal or influence that we know of to have a preferred set of men who are of a particular political opinion. Such questions are never asked. It is the fitness of the man.

Mr. HEALY: If a foreman or a superintendent were taking men that had a "pull," what action would be taken?

Mr. BAKER: He would be reported at once to his Chief, and the Chief would bring the matter before the committee, and the committee would at once discharge him.

Prof. PARSONS: There are three points to which I would like to direct Mr. Donald's attention for a moment. The increase of taxes in recent years which is charged to municipal ownership, the alleged unreliabiilty of municipal accounts, and the keystone of advantage—what he considers the chief advantages of municipal ownership. Those three things—the increase of taxes, the unreliability of accounts—the question of audit, etc., and the principal benefits of the system.

Mr. DONALD: About the increase of taxes; you may take any reference book—take for instance the Stock Exchange Intelligence Year Book; at the beginning of it there is a list of municipal productive undertakings and non-productive undertakings, the amount of taxes and the amount of debt; you will find there are exceptions, one city might have an enormous expense over its sewerage or something, but as a general principle the cities that have advanced farthest in municipal trading have the lowest taxes. The city of Bolton has municipalized everything for a considerable number of years, and it relieves its local taxation to the extent of £50,000 a year out of profits, which is about £1 per house in the city. It would amount to a shilling in the pound on the tax rate. Now you have visited the city of Norwich. Norwich, it has hardly any municipal ownership or profit out of municipal trading, and the rates are very high. I object to this principle of relieving rates out of profits, but there are several reasons why we are obliged to do it. The system of local taxation is very unjust in this country. It is levied on the annual value or rental value of property; therefore it hits houses very hard, and industry, while it touches land very lightly. We have a big local taxation problem, and until that problem is solved on an equitable basis we consider it a matter of expediency to relieve local taxation out of municipal profits. The sound policy for a community is to look at the social balance sheet as Mr. Wood has mentioned to you, and the financial balance sheet, and give the community cheap tramway fares, cheap gas and cheap electric light. You benefit the community more in that way than by a system of indirect taxation, which is unsound business and bad policy. You must regard it generally as an opportunist policy. If we had our local taxation on another basis, the general system here would be to do away with profits and give the community the benefit in prices; and another

thing, we ought to look ahead to the time when the capital charges on most enterprises will be very low, and the benefit to the consumers all the more.

Prof. PARSONS: About the accounts and the question of audit?

Mr. DONALD: You can put aside County Councils and District Councils and the London County Council, because they are all under Government. The other towns—the municipal Corporation Boroughs—all have, in their own service, an accountant who keeps the accounts. In addition to that, they call in a professional auditor who is perfectly independent. A chartered accountant must maintain his professional standard.

Prof. PARSONS: With regard to the audit; would the audit show what ought to be the capital charges against the undertaking in all instances? For example, if street widenings were put down to the expense account of another Committee than the tramways, would that be revealed by this audit?

Mr. DONALD: It would show exactly how the capital has been disposed of. The accountant would treat the municipal corporation exactly as he would a private company. An accountant cannot deal with the allocation of capital in a private company. He will deal with the soundness of the accounts and finance. Accountants reported when there is not sufficient depreciation.

Prof. PARSONS: Could we, as a Committee, rely upon the statement as certified to by the accountant that a certain amount has been spent upon tramways? Could we rely upon its including all the items? Would it include the money that had been spent by the Highways Committee to widen streets?

Mr. DONALD: Yes, and Mr. Baker can tell you that. The provincial municipalities widen very few streets for tramways—the traffic is not so great as in London and it is not necessary to do it.

Mr. BAKER: The entire cost of all the street widenings that have been paid for by the seven or eight tramways companies who owned lines in London before the franchises fell in and we purchased their undertakings—the entire amount that they had spent for street widenings in the whole County of London, was £23,000. Now when a municipality comes in to carry out any street improvement there is always a different standard set up from that which prevails in connection with the company. The Local Authorities will say to the London County Council: "If you run a tramway out there we must have a very big widening." If a company was coming they would say for "Tramway purposes we want so much and we will take so much." Mr. Wood has said that there has been a sort of rule of thumb basis upon which we have acted, one-third of street widenings charged to tramways account, one-third to the Local Authority, and one-third to the Metropolis charged as a metropolitan improvement for through traffic. That has not prevailed in all cases. As a matter of fact in all cases of street widenings that we have carried through up to the present moment, on

any of our working lines, the whole cost has been charged to the Tramways account. And we have assumed capital charges of over £100,000 for further street widenings where a third has been charged to the Tramways account for improvements on streets where there are no trams as yet; and we have paid ten or twelve thousand pounds on interest and sinking fund in advance on those streets and on those new roads—in advance of a single line having been opened or a single car having been run. And we have been buying our electricity at about three times the price that we ought to have paid, because we are taking a temporary supply. They have their own stations for generating and we will have after the middle of this year.

The CHAIRMAN: When you get a franchise from a Local Authority, how long does it last to run a tramway?

Mr. DONALD: The London County Council gets them forever of course.

The CHAIRMAN: Is that because of any peculiar law with regard to London?

Mr. DONALD: No. The municipality has a franchise forever.

The CHAIRMAN: Suppose you go outside of London?

Mr. BAKER: We make arrangements for seven years renewable and so on.

The CHAIRMAN: I mean where you go in and build the track. You could go into a suburb of London and take a franchise from a Local Authority, build the track on condition that your property could be taken in 21 years at its value.

Mr. BAKER: Oh, yes, we do that.

Mr. DONALD: You must never forget that the municipality has to work for a different principle, a different ideal. You have not, perhaps, examined the London United System, but if you did you would come to a place called Brentford, where they have put down two tracks on a street that is not wide enough for one. The result is that the number of accidents there is enormous. A carriage or a horse cannot go through if there are two cars coming along. Sir Clifton Robinson ought to have told you how he managed to get through Brentford without widening that street—that would be very interesting, because within the next few years municipalities will have to widen it for his benefit; it is a curiosity—High street, Brentford.

Mr. HEALY: How did he get through there?

Mr. DONALD: No. You must ask him that. I don't know how many councilmen he saw, nor what he said to them.

Mr. WALTON CLARK: You were speaking of your cost of operating as expressed in the percentage you have earned on your investments—that is last year's.

Mr. BAKER: That is the last published issue.

Mr. WALTON CLARK: How many miles?

Mr. BAKER: We had about 26 miles of electric lines and about 20 miles of horse probably.

Mr. WALTON CLARK: You are probably not expending unnecessarily any amounts in repairs on horse cars.

Mr. BAKER: No, but we are doing something more. While we are reconstructing our horse lines we are shutting up large sections of them and taking no receipts whatever there; the whole system is disorganized, and the receipts drop practically 50 per cent. During the first two years of reconstruction on the South, we had small deficits of £2,000 and £8,000, but that was because we set aside £50,000 to £60,000 a year for sinking fund and renewals, in addition to the payment of £25,000 interest the first year, and £57,000 the second year. We pay interest and sinking fund in advance of any lines and trams being run at all. In one of those years in which we show a deficit we had actually paid in this advance interest and sinking fund about £4,000 more than the amount of that deficit—about £12,000 or £13,000 was paid in advance interest and sinking fund. We are paying at a rate that will pay the whole thing off in 25 years, the lines in the meantime being actually closed during reconstruction.

Mr. WALTON CLARK: During this period that you did not make any earnings on this horse track, had you any money lying without interest?

Mr. BAKER: You borrow more money—it will be on deposit and will be earning a small amount. It takes you a year to reconstruct a certain portion and get your cars to running—you pay three-quarters of the whole of the construction charge before you are able to run a single car, and you commence to pay your interest and sinking fund immediately.

Mr. WALTON CLARK: How old are your electric trams?

Mr. BAKER: About three or four years old.

Mr. WALTON CLARK: How many miles?

Mr. BAKER: We have 30 miles of line double track electric conduit about 2½ or 3 years old. While we are putting aside what we call renewals and reserve accounts, the whole system is being practically kept up out of revenue. We have actually expended during these last three or four years, £65,000, which might legitimately have been taken from a renewals or reserve fund, because we paid out of profits capital charges that in the ordinary way would be spread over a number of years.

Mr. WALTON CLARK: Have you any account of the amount you paid for maintenance and repairs per mile of track? Not what you put aside, but what you have spent in keeping up joints and renewing plant.

Mr. BAKER: We keep a careful account of that, and it is paid out of revenue. Under police regulations in London we are obliged to keep all our cars up to complete and perfect working conditions all the time. They are annually licensed under those conditions. They have to be repainted and fixed up. If a car is smashed up in an accident and practically becomes a wreck, it ought to go on your renewals fund, you have to put on a new car—but we simply put in all the new parts and make a perfectly new car, which is all charged to the revenue account.

Mr. DONALD: You ought to compare Dublin with English cities—Sheffield, Leeds, perhaps come nearest in population—and you will find that the comparison is in favor of the municipality on every point—the amount of profit earned and everything else.

Mr. BAKER: We in London are expected and we are glad, to keep up a standard of paving that is quite above what is usually demanded of, or is usually carried out at all events, by any company. Comparing Clifton Robinson's system of the London United for example, and ours here, our paving and maintenance is very much better than his. With the very heavy traffic that we have here, the maintenance of paving is a very considerable item. Another thing, we are paying not only interest and sinking fund and all these charges out of revenue, but we are paying in local rates to the Borough Councils, through whose districts we run, the sum of £500 per street mile.

Prof. PARSONS: How about the competition of the bus and the motor bus? Is it about the same on your system and the United?

Mr. BAKER: There is very much difference. The competition with us is much greater than on the London United. They have practically run the busses off their streets. We cannot hope to do this until we cross the bridges and unite our Northern and Southern lines. But I think municipal tramways are hardly hit from the fact that they have to pave and maintain paving for the motor omnibuses and all the other traffic as well.

Prof. PARSONS: Do not the companies do that also?

Mr. BAKER: Both are unjustly hit in that way. We pave between the tracks and eighteen inches on either side and maintain it perfectly and at a higher standard than any company does, and yet having no horses, we do not wear the pavement at all. We have tram cars that carry 70 passengers. If we did not have those trams there would be two motor omnibuses with 34 passengers to each bus or something of that kind—a less number for two motor omnibuses than we carry in one of our cars—there would be more street congestion, and infinitely more wear on the pavement; so while we are paving and maintaining pavement we are taking off the traffic on that pavement, which would be two, three or four times as great if it were not for our service.

The CHAIRMAN: Is it a fact that outside the city of London the veto power of the small Local Authorities is a hindrance to the development of suburban systems such as we have in the United States?

Mr. BAKER: This Borough Council veto in London has undoubtedly hindered tramway development to an enormous extent. Had we had the whole position in our own hands, we would have had a more complete system for London—you would have seen it much more up-to-date.

The CHAIRMAN: Is it the same throughout the country as a whole?

Mr. BAKER: The little Local Authorities have been a great disadvantage both to the companies outside and to the larger municipal authorities.

Prof. BEMIS: I know that Mr. Baker has been in America a good deal. I have read one or two valuable reports of his on tramways, comparing American with English conditions. Of course we are all very much struck with the far greater development of tramways in America than in England, and we are also familiar with an assertion of Mr. Robert Porter that this difference is due to the fact that private ownership has full swing in America and does not have it here. I think a word from you on that point would interest us.

Mr. BAKER: You say rightly that I know something about the conditions over there. I was born in Canada, and have traveled pretty well over the States, and when I joined the County Council at first I felt that my best service would be given to London by putting into actual practice in the London County Council some of the experience I had gained in America and other countries. And being an engineer I took up the tramway question as a specialty. I am perfectly familiar with all the development over there from the cable in Broadway and the first little bit of conduit on Lenox avenue, and then the development of the conduit and the change of the cable into the conduit. I go to America every year and spend a month or two in the United States and Canada, and naturally keep my eyes open in regard to these matters. And I have said on various occasions that I am simply astonished that, with the type of men that you have available in the United States, great administrators, great business men who can build up gigantic fortunes, you cannot find a type of man who has the interest of the great community in which he has made his money sufficiently at heart that he might from a purely patriotic point of view give up a part, if not the whole of his time, and do for the public good that which he has done for himself, and administer some of these great utilities, and see that your city government is pure, and that these great services, like water, gas, electric light and tramways—street railways—and a few others, are carried on not for the benefit of a monopolizing company, but for the benefit of the public. And one argument I use is this: If we in London can carry our passengers at less than an average of 1d. per passenger, while a company just outside of us find that they have to charge 1½d. for their average fare, that ½d. which is saved becomes in the aggregate a very considerable amount to the passenger during the year.

Prof. BEMIS: I don't think you quite answered the question I meant to raise, which was to explain why England has been so much slower in tramway development in mileage per million population than America. Is it due to municipal trading or other causes?

Mr. DONALD: I will answer that question by asking a lot of other questions. I want to know why telephones were popular in America years before they were in England, and I want to know why you developed boot-making much before we did. It is the

character of the people. It has nothing to do with municipal trading at all. The same as your railroads. American railroad administration is ahead of ours. We had to import an American to electrify our district road. When George Francis Train came over here with a tramway, nobody would look at it—it is the character of the people. America has such a lot of inventors, and they have so much energy, that if a thing is new it is taken up at once. The same with the typewriter.

Mr. BAKER: From our experience here, we find the two essentials for success are, first, getting men of first-class ability and of sterling character to carry on the works as tramway managers or as electrical engineers, men put in with a view to a permanent situation so long as they do their duty, entirely independent of party and of political pull.

The CHAIRMAN: Do you find any difficulty in keeping that class of men in your service?

Mr. BAKER: Absolutely no difficulty whatever.

The CHAIRMAN: It has been stated to us that cities outside of London had some difficulty in getting engineers. Engineers would prefer to work for a private company rather than for a municipal corporation.

Mr. BAKER: It may be so in some cases. Some of the better corporations may feel they are entitled to pay a higher salary. A municipal enterprise should not be conducted on penurious lines.

The CHAIRMAN: Can an engineer expect to receive as good a pecuniary compensation from a municipal corporation as he would from a company?

Mr. BAKER: There may be exceptional cases one way or the other that would show a different view, but I think the balances are equal; if not, better salaries are paid by the corporation than by the private enterprise.

Prof. PARSONS: With the leading business men who go into your local governments, managers of large affairs, is the social consideration they receive a part motive?

Mr. BAKER: I think probably a great many men will be influenced by the fact that they are brought into public notice, and they get a certain amount of honor and eudos, as we say, from service of this kind. I think you must endeavor to get the class of man to serve on these bodies who will be patriotic enough and disinterested enough to put private interests entirely aside, and have the public interest entirely before him as his aim and his ideal.

The CHAIRMAN: Can a man who has not an independent fortune devote the time that is necessary to carry on this work? Can he carry on his business successfully?

Mr. BAKER: Of course one can only speak from his own experience or particular observation. I couldn't afford to give up business to carry on this work. I have to earn my bread and butter. And it means considerable sacrifice. My trips to America, producing reports on tramways, and so on, have always been at my own expense. And I would not venture to say how many thousands

it has cost me during the last ten or twelve years—and what one might have made in business if one had given all one's time would amount to many more thousand pounds. But having food and raiment, and being content not to live in great style, one feels it is a privilege and a pleasure to give up a certain portion of their time for doing good. And if one has a few thousand pounds less in one's banking account per annum or at the end of one's career than one would have otherwise, one would feel that he had served their day and their city to the best of his ability.

The CHAIRMAN: How much time does it take generally?

Mr. BAKER: On the London County Council one would have to give three or four afternoons a week. I have given three days a week for the last nine or ten years.

Mr. MOFFETT: Practically half your working time?

Mr. BAKER: Yes. And with Parliament I am going to give more—right up to 12 o'clock at night. I am giving up the London County Council at the end of this year, because I feel my work in Parliament will not allow me to do justice to this work.

Mr. MOFFETT: We have been told that when a company seeks to obtain authority from Parliament to enter the tramway or the electrical business, pressure in several ways is brought to bear upon Parliament to prevent their getting this privilege. We have been also told in regard to this matter that there is an association of municipal employees, called the Association of Municipal Corporation Clerks, composed of Town Clerks and others, and that this association would get its members together, and use their influence to the detriment of the petition of the company. Now, are you aware of the existence of such an association, and are you also aware of its acting in that particular way?

Mr. BAKER: I know of no case in which the Association or Corporation of Clerks has acted in the way you state, and I do not know on what basis or how they would be able to act in that way. Of course nearly every franchise that is sought from Parliament in London or in any other municipality is on principle opposed by the municipality. I do not think there is any railway Bill, whether it is a steam railway, an underground railway or tramway enterprise, or an electric lighting concern, that the London County Council does not feel that it is necessary to have a status before Parliament, and therefore the Parliamentary Committee considers the thing and they may decide to oppose it. It does not mean that the opposition is carried to the extent of trying to prohibit, but to safeguard the interests of the public, for whom they are guardians or custodians. It becomes an absolute necessity that they should have counsel and appear, either on preamble if the scheme is not good, or on clauses if the preamble and general principle is approved of, so that they may get conditions that will be in favor of the public at large. For example, when the London United Tramway was coming inside, or the Tube Railway, the Central London, were getting their franchise, the London County Council had their Attorneys or their Counsel present, and would have a say

in regard to the position of the stations, the safety of the public, the fares that should be charged, a certain number of workmen's cars to be run morning and evening in the interests of the working classes, etc.; and they would be heard in that way, not necessarily opposing the scheme.

Mr. MOFFETT: You would say that when a company has status before Parliament no such pressure is brought to bear upon Parliament that would deny the company its privilege under that status?

Mr. BAKER: I think not. Of course private members hold their views in regard to these schemes, and they will speak to their friends naturally, and the merits or demerits will be discussed; and if a municipality was seeking powers at the same time, those who believed in municipal ownership might naturally do a little work on their own account and try to get the municipal bill carried through. That is the situation in general.

The CHAIRMAN: The statement was made that under these conditions the municipality that was opposing a company would apply to this Association of Town Clerks, and that they would circularize Parliament, sending from each Town Clerk a petition for the particular municipality with which he was connected, and writing the Member of Parliament to oppose this Bill, and could and did organize a tremendous general opposition which it was very difficult for the company to overcome.

Mr. BAKER: Of course the municipalities may to some extent help each other in that way if they believe that the incoming private corporation would be a detriment to the municipality carrying on certain work. I think they do in some cases.

Mr. HAWES: Did they tell you that they also had an organization under the title of the Industrial Freedom League, which undertakes even more violent measures in favor of the companies and against the municipalities?

Mr. MOFFETT: We were told with regard to the matter of accuracy in municipal accounts that in Leeds £300,000 had been spent on tramways, and at the same time £300,000 in street widenings, and that not one sixpence was charged to the Tramway Account with respect to this last expenditure. In other words, £600,000 in all was spent, £300,000 of which was spent for widening the streets; yet the books showed but £300,000 spent on the tramways, the second amount going to some other account.

Mr. BAKER: It is a debatable point whether there is any justice in charging street widenings either to tramway companies or municipal tramway enterprises, inasmuch as they pave and maintain the paving for the rest of the traffic on that street. But I think if you take the amounts that are paid by municipalities throughout the country for street widenings where tramways are carried through, and the amounts that are paid by companies in proportion to the length of mileage, you would find that the municipalities pay a much larger amount than the companies do, and make much more valuable contributions to the general interests of traffic at large.

Mr. HAWES: As the Leeds tramway contributes £140,000 per annum to the rates, it makes a pretty good return even if the whole street widening has been charged to another account.

Mr. MOFFETT: Is there any general disposition upon the part of the friends of municipal ownership to disfranchise municipal employees?

Mr. BAKER: I should not think so.

Mr. MOFFETT: Is it not being considered?

Mr. BAKER: I do not know of it. I do not see why that point should arise. These men, if they are properly controlled and understand their duties, are surely employed to do their duty quite apart from any particular party.

There is one point that I was going to refer to in making the comparison between the London United and our Southern system, as regards depreciation and reserve. We had £66,000 in that year, while the company had £5,000 put aside to depreciation and reserve fund.

All our tramway work will be for the next two or three years in the transition stage. We are now commencing to reconstruct the northern lines, and until they are done and regularly working, we cannot show our best results, many of our best lines being closed in sections for the time.

Mr. HEALY: It has been stated that private companies cannot compete with the municipalities in tramways. Cannot a private company that is well managed compete with the municipality?

Mr. BAKER: I think they can run their cars and probably give just as good a service and can be as ably managed, but of course the whole basis of the work is different. In one case the tramway is being run in the interests of the public at large, and under the municipal system the lines will be carried to places probably for housing and other purposes at cheap fares where the company would not care to go. In the other case the tramway is being run entirely in the interests of as large a dividend as possible—two different ideals.

Mr. HEALY: The statement has been made to this Committee that people in private business are beginning to think that where municipal trading is introduced it is a good place for the private companies to keep out of, and one of the reasons given was that municipalities were paying so much for labor that the private companies could not compete.

Mr. BAKER: I do not think there is anything in that. The municipal tramway enterprises pay the standard rate of wages, and have better conditions than prevail where companies have a similar enterprise. I think there is no doubt that the municipal corporations do pay more—they pay the standard rate, and instead of having a seven-day week they give a man one day off, and a 9 or 10 hour day in place of an 11½ or 12 hour day, and wages in both cases about equal. There comes in the benefit to the community. You have a few more men being paid regular wages, the money that these men earn in turn goes into the pockets of tradesmen.

Where you have men working under municipal conditions 10 hours a day, and one day's rest in seven, you don't have so much to pay in poor rates and in hospitals and in human wreckage. Your humanity is better preserved. It becomes an economy I think in the long run.

Prof. BEMIS: You do not think it develops a privileged class?

Mr. BAKER: Not at all, because we do not go beyond what any trades union would do in fixing a fair day's pay for a fair day's work.

Prof. BEMIS: It is charged that you have no safeguard as you have in electric lighting and gas, and therefore it might raise wages ad libitum ad nauseam.

Mr. BAKER: We have a trades union of conductors and drivers, and Manchester has a strong trades union.

Mr. HEALY: We find in the city of London that the omnibus drivers work every day of the week for 15 and 16 hours a day.

Mr. BAKER: It is a very hard and very rough life. Among them you have a great deal more human wreckage, and very shortly you have to retire them in the poor houses, asylums and hospitals; and in various other ways they become a charge on you. Proper conditions pay under all circumstances, if you work from the commercial as well as from the moral point of view.

Mr. WALTON CLARK: What wages do you pay for platform labor—motormen and conductors?

Mr. BAKER: I think they get up to 42/- per week as their maximum, and 7d. or 8d. an hour as a rule. Their hours are 10 per day. They begin on a rising scale. They get 5/6, 6/-, 6/6, and 6/9 or 7/ after they have had so many years' service. It is according to merit, time and service.

Prof. BEMIS: The Newcastle Supply Company has a very low operating cost. It sells more electricity than any other company or corporation in Great Britain, or will at least in the coming year if they do not already. The question has arisen, is that fairly typical of private ownership in Great Britain, where we of course know that other companies, private companies, have not grown as fast; but the question is, is that due to parliamentary restrictions or lack of a field for selling electricity? Or is it simply the fact that the Newcastle Company is exceptionally enterprising and is not perhaps fairly typical of private companies? If it is typical it means more of course than if it is exceptional.

Mr. HAWES: There is no doubt whatever that the Newcastle case is an exceptional one. It is a very special area of supply, that is to say, it gets an excellent diversity of load. It has a railway supply, the docks and all the shipyards of the Tyne. It also has a supply of power to a very large number of chemical works on the Tyne, which take supply about 24 hours a day. It further has a tramway supply. It has again a bulk supply to smaller concerns, and in addition to all that, it has the great advantage of having the lighting business of half the city of Newcastle. The Newcastle Company is controlled by extremely energetic engineers and directors.

The CHAIRMAN: Is there any reason why there should not be the same diversity of supply in other places, as on the Clyde for example.

Mr. HAWES: There are a few places in the Country where you can get somewhat similar conditions, but comparatively few. London is one on the banks of the Thames and Clyde is another; Liverpool might be another case.

The CHAIRMAN: How about Manchester?

Mr. HAWES: They are doing well—not perhaps so well as Newcastle. I would like to say this as to Newcastle: In the old days when they were a lighting company and restricted to half the city of Newcastle, they were able to pay excellent dividends ranging up to 8 per cent., and at the same time to preserve their assets by setting aside a substantial sum for depreciation. Since they became a big power supply company they have only been able to maintain their dividends, not at the ordinary rates they used to pay, but at a much lower rate, by practically neglecting the depreciation fund. Now there has been a great glamor thrown over this Newcastle company's operations. But to my mind, after carefully studying their records, if they do not soon make it their practice to establish a substantial depreciation fund for protecting their plant, etc., they will in a few years be in the condition of some of the other power companies, having to face the problem of reconstruction with no adequate depreciation or renewal funds.

Prof. BEMIS: Now as to the Clyde. The city of Glasgow did not try to reach that field apparently, or did not reach it, but left it to a private company to do so. Why was that? Is Glasgow to be criticised for not having got that business or are there other conditions that made it more difficult for Glasgow than for a private company farther down the Clyde to do it?

Mr. HAWES: Yes, I think so. The service is dependent upon quite an artificial boundary line, that boundary line being the area of the municipal Borough. All our corporations (cities) have had to restrict their energy and their services to their own boundaries, because to go outside causes serious questions of local self-government. It is easier for a company. Where any service overlaps several areas under our existing local governing laws it is easier for a company to obtain the powers to carry out those services than for one central authority.

Dr. MALTBIE: Do you know whether it is true that Parliament more reluctantly gives a municipal corporation the right to go outside of its Borough in the case of electric lighting than it does a company?

Mr. HAWES: That is so. When powers were granted years ago to the municipalities they were actually restricted to their own borough boundaries.

The CHAIRMAN: I think it is a very important social question. If not a mere fault in your law then it makes an inherent disadvantage in municipal ownership.

Mr. HAWES: It does to the extent that you are restricted by this official boundary line.

The CHAIRMAN: Do you think it is merely in the law? Could the law be changed?

Mr. HAWES: Undoubtedly.

The CHAIRMAN: To an American the situation that you have in London is simply ludicrous on the subject of electric light. It is the most absurd situation I have seen, but it is simply due to the law.

Mr. HAWES: It is; yes. If our British Parliament could go back and re-arrange electric lighting matters it would grant powers and privileges entirely irrespective of the question of boundaries.

The CHAIRMAN: How can you do that on a basis of municipal ownership? If you grant powers, who are you going to grant them to?

Mr. HAWES: In the first place you must make the Municipal Authority cover sufficient ground to give it a proper electric supply.

The CHAIRMAN: Can it be done?

Mr. HAWES: Yes, because every local governing authority has the right to go to Parliament to extend its boundaries and incorporate others.

The CHAIRMAN: Take the neighborhood of Manchester—would not those people outside look with jealousy upon the corporation of Manchester coming in?

Mr. HAWES: They would undoubtedly. There has only lately been a case where Liverpool tried to acquire Bootle. Bootle fought against the incorporation and said it could do better for its own residents in its district than the Liverpool corporation could do for it.

Prof. PARSONS: Is it not a fact that Manchester has made agreements with neighboring authorities to supply them with electricity?

Mr. HAWES: Yes, it has with authorities that would be reluctant to supply themselves.

The CHAIRMAN: How do you municipal ownership people hope to overcome that difficulty?

Prof. PARSONS: Is not the example of Manchester an illustration of the way in which it can be done?

Mr. HAWES: Yes, one, but it does not get over the difficulty where separate undertakings have been established. That is a very serious question.

The CHAIRMAN: Have you any program for that?

Mr. HAWES: I do not like to express opinions on that point, because this matter is one on which I may be called upon by one side or the other to express opinions in Parliament or before the Parliamentary Committee, and one has then seriously to consider the problem represented by local circumstances. But I think probably the difficulties would be overcome by a combination of municipal authorities in any given district, that is to say, by the

creation of what we might term a joint Committee of Control. Having the control of electric supply or tramways of a given district, the Committee to report to the Borough Councils periodically as to the duties they were carrying out and the results.

The CHAIRMAN: Something on the order of your water Boards?

Mr. HAWES: Quite so. All the difficulties will be overcome and are being overcome by the establishment of joint Boards. I have in mind the one joint Board that is operating now in the Stalybridge-Hyde-Dukenfield-Moseley District in Lancashire, that probably indicates the line by which this "area" problem will be solved.

Prof. PARSONS: Will a company get the right to run tramways and electric light and all these things outside through a number of municipalities more easily than a city like Manchester could get the right? Would the municipalities outside fight the city more than it would the company; is that what you say?

Mr. HAWES: No matter where the movement comes from, from one of the central municipal authorities or from a company, it will probably face opposition by all the others until such time as they can make mutual arrangements.

Prof. PARSONS: Have you any concrete facts to show that local authorities will refuse to co-operate with municipal plants in this way?

Mr. HAWES: I do not think they would; I think they would be inclined to co-operate with them and assist them, if they had their own district protected. But as I know very well, and we all know, each little local governing authority has very great regard for its own importance.

Prof. BEMIS: You say that owing to the action of Parliament or other reasons, it is harder for a municipality than a company at present to get extensive rights over large areas.

Mr. HAWES: I do say that as exemplified by these power Bills that have been passed by Parliament. A municipality enters into what is called a trading concern in which a loss may be involved. The people in its own area are apt to say that the people in the outside areas ought to stand some of the risk that they themselves would have to bear in the event of a loss being made. Now there seems to be no provision at present by which a municipality extending its services into outer districts could make the outer districts responsible for any losses which it might incur in the early stages of that undertaking, that is the difficulty.

Prof. BEMIS: You spoke of the Clyde district as being perhaps as good as the Tyne. Now what other supply companies—there are eight in all I believe—what other supply companies have districts nearly or quite as good as the Tyne and the Clyde?

Mr. HAWES: I would not say quite as good; I would except the case of London, but that is split up into some twelve companies.

Prof. BEMIS: But there are other companies in Wales and Lancashire?

Mr. HAWES: Oh! Power companies, yes; but in not a single case is the area of supply so good as that of Newcastle.

Prof. BEMIS: Have they displayed as much energy as Newcastle in using the opportunities they have had?

Mr. HAWES: I do not think so, but they have not the same opportunity. The South Wales company, which has a fair area of supply—finds itself at present in a very serious financial position, as it is unable to develop business enough to get a return upon its capital.

In some cases the local authorities have the supply in their own areas, which are included also in the South Wales area, but their way was to supply electricity on a large scale to collieries and very large factories and manufacturing concerns. They find, however, that these collieries and local manufactories have their own plants, and they prefer to make the energy themselves rather than take it from the power company.

Dr. MALTBIE: The current is supplied in Newcastle at a very low rate, is it not?

Mr. HAWES: Yes, because of the enormous output they have got and their great diversity of load. They distribute a lot of power at very high pressure and as a consequence avoid electrical losses to a very large extent. In that way they are able to convey a current of ten thousand volts direct from their high pressure feeders into the shipbuilding yards, with small sub-stations, and avoid what would otherwise be heavy electrical losses.

Prof. PARSONS: What would you think if you were told that they could make current at their main station at .11d. or .13d., covering coal, labor and materials?

Mr. HAWES: In our scheme that we put before Parliament this year—the London County Council—we estimated that we could produce electricity at a fuel cost of about .15d. per unit; and the Works cost, including coal, water, stores, labor and repairs at .197d. per unit.

Mr. WALTON CLARK: What is the Tyneside output?

Mr. HAWES: I think it is now about 32 millions—40 millions made and 30 millions sold in the two stations.

The CHAIRMAN: Is there any area in this country that has a larger output than that?

Mr. HAWES: Oh, yes! London jointly, very much larger than that. Liverpool has a larger output than that of Tyneside. Liverpool's output for the year ending December, 1905, was 32 millions, Manchester's was 33 millions.

The CHAIRMAN: What is the population of these districts, and of Newcastle?

Mr. HAWES: Manchester, 698,000; Liverpool, 604,000; Newcastle would run to a million I should think; it involves so many local districts. The area of supply by the Newcastle company involves other companies to which it gives a supply in bulk, which is difficult of computation.

Prof. PARSONS: What would be the cost of coal in the London County Council estimate you have given us?

Mr. HAWES: We reckon it to be 9s. a ton delivered into the boilers. Tyneside coal is 5s. a ton, and they have to incur the delivery charges into the boilers.

Mr. HEALY: You use a poorer grade of coal than what is used at Newcastle.

Mr. HAWES: No, I think it is about the same; Newcastle avoids the cost of transit from the Tyne district to London because they have coal at their back door.

Prof. BEMIS: Comparing the use of electricity for light and power per capita here and in Boston and most American cities, we find you use a less number of units per capita.

Mr. HAWES: We are not in it with America yet. You Americans, I think, are more up-to-date and desire a cleaner illuminant and a more efficient source of power than we people over here are prepared to demand, and you insist on your factories being driven by up-to-date means. We have been content to go jogging along in the old fashion too long.

Prof. BEMIS: The statement is often made that electrical backwardness in Great Britain is due to municipalization. What is your explanation of it?

Mr. HAWES: I can hardly agree to that. I do not quite see how we would be very much further on now if municipalities had not dealt with the work. Municipalities in connection with tramways only took it up in recent years. They found the companies were not prepared to tackle the job on comprehensive lines, so the municipalities undertook the task and they are now showing pretty good headway. Similar conditions apply to electric supply. Our early legislation in regard to electrical supply and electric tramways certainly had a tendency to retard the growth of this business because it applied certain restrictions to it which capitalists in those early days would not face by risking their money. It brought up the question of limited tenure. That was altered later and then electric supply made very much better headway.

Prof. BEMIS: That was due then to the attitude of Parliament rather than the attitude of municipalities?

Mr. HAWES: Undoubtedly.

Prof. PARSONS: What in your experience has been the attitude of a municipality that has a gas plant towards the introduction of electric light?

Mr. HAWES: Many years ago a municipality holding gas works would view with very great disfavor the idea of a company coming in and getting powers for the supply of electric light. But the position is entirely altered now, because electric supply is available now in all the principal towns of the Kingdom.

Prof. PARSONS: Might that not have had some influence on the development of electric light in the cities?

Mr. HAWES: I do not think so. They not only had to say "we are holders of gas works and are to oppose this company," but they also had to make up their minds to apply for electric powers and to carry them out. It may have had a slight effect, but not much.

Mr. MOFFETT: Is it not true, Mr. Hawes, that in some cases where the municipality has a great lot of money invested in gas works, comparatively speaking, the municipality will advance the gas proposition at the expense of the electrical proposition. Do you know of such cases?

Mr. HAWES: No. I do not think that is quite a reasonable thing to expect a municipality to do.

Mr. MOFFETT: I had got the impression that there was at least one city we had visited where that sort of thing did obtain within the recent past.

Mr. HAWES: I do know of a case in which the municipality carried on a gas supply and also carried on an electric supply and did use an unfair advantage for one against the other.

*Question:* You only know one instance of it?

Mr. HAWES: Yes. It has been suggested that Stafford is another case.

*Question:* What, so far as you know, was the origin of these extremely restricted measures of 1882?

Mr. HAWES: Mr. Chamberlain's first Act. At that time the idea of municipal ownership of these different services which utilized the streets was being put before the country very forcibly, and they felt that even if powers were given to companies some very severe restrictions should be placed upon them, and the municipal authorities should at the same time be given the right to come in and take possession of these undertakings.

Prof. BEMIS: Do you think their experience of having to pay the big sums they had to to buy up the gas companies influenced them in any way?

Mr. HAWES: I should say so undoubtedly.

Prof. PARSONS: Referring to what you said about the opposition not being very effective in the way of retardation, for the reason that the city had to apply at the same time for rights and had to use those rights within a limited time:—Is that conclusive in view of the fact that they could use the right and yet make the relation of price between electric light and gas such as to shut out one or the other, just as they chose practically? Could not the city get electric rights and make the price of electricity such that the gas could easily hold the field against electric light?

Mr. HAWES: Yes, they could—but don't. Experience is all the other way. Electric light is being supplied by municipalities at such a reasonable cost that it is displacing gas all over the Kingdom. And the records of the undertakings show most conclusively that the municipal authorities are selling electricity to the consumer at a much lower price than the companies taken as a whole are doing, and they are able to do that by the more economical method they have of producing electricity and carrying on their undertaking than the companies as expressed by their working expenses per unit of output. The cities sell electricity cheaper than the companies, and produce it more cheaply on the average.

Prof. PARSONS: I did not quite catch what you regarded as the causes enabling municipalities to charge less for their electricity than the companies.

Mr. HAWES: I said one main feature was that their working expenses per unit were lower, particularly the working expenses of delivering the electricity to the consumers. The average price charged to consumers for energy delivered by the 181 municipal undertakings in the United Kingdom was 2.6d. per unit, and the average price charged by the 69 companies was 3.71d. per unit. The average working expenses per unit for the municipalities was 1.28d., and for the companies 1.88 per unit. This is a summary of the 250 undertakings in the United Kingdom.

Prof. PARSONS: What are the items of working expenses?

Mr. HAWES: Coal, lights, stores, wages of workmen, generating and distributing department, rents, rates and taxes, management expenses, legal charges, office expenses, stationery and general administration.

*Question:* It does not include any capital charges?

Mr. HAWES: No capital charges on either side.

*Question:* Does it include depreciation?

Mr. HAWES: No.

*Question:* What was the average output for municipalities and companies?

Mr. HAWES: 303 million units for the first and 118½ millions for the second.

Prof. BEMIS: The majority of the undertakings as far as bulk is concerned are in London, where coal and labor are higher than in the provinces. How much of the .6d. per unit difference in operating cost in favor of the municipal plants would be swept away by taking account of that? Would all of it be swept away or only part of it by allowing for the location in London?

Mr. HAWES: It would account for only a part of it. I will give you the figures for London undertakings, for 26 undertakings operating in the administrative County of London. The average price charged to consumers by the 12 municipal undertakings, was 3.23 pence per unit. And for the 14 company undertakings the average price was 3.94 pence per unit. Per kilowatt delivered, in both cases. The working expenses for London in the case of the municipal undertakings were 1.71d. per unit, and in the case of the company undertakings, 1.98d. per unit.

*Question:* To what do you attribute that?

Mr. HAWES: Well, it is very difficult to say, in detail, but the companies should be more efficiently managed.

Mr. MOFFETT: You pay higher wages for one thing; that makes the explanation all the harder.

Mr. HAWES: Yes.

*Question:* In London the average size of the company is greater too?

Mr. HAWES: Yes, certainly. The company undertakings delivered 87 million units, the municipal undertakings only 27

million units. There is an average of the value of representative undertakings. I say the figures are most expressive.

Mr. WALTON CLARK: Not unless you give an analysis and find out where the difference is.

Mr. HAWES: There is no difference. You are speaking of the way in which the accounts are made up; there is no material difference. The Board of Trade prescribes the form of accounts which all these undertakings have to conform to, and every London Borough Council's accounts are subject to most rigorous scrutiny which is quite as severe as that which is applied to company undertakings.

Mr. WALTON CLARK: If that is so, why is it costing the companies so much more?

Mr. HAWES: I put it boldly; I say the municipal undertakings are worked more efficiently. One material fact is that the municipal undertakings have paid more per kilowatt of plant than the companies.

Mr. WALTON CLARK: You said there was no interest charged.

Mr. HAWES: True, but it will have some effect before you come to consider the question of capital charges.

Mr. WALTON CLARK: I mean it will not affect the cost of operating.

Mr. HAWES: I do not know about that. If you have a company giving out plant to its friends you are not likely to get such a high class of plant as if you have it bought in the open market under a vigorous specification.

Mr. WALTON CLARK: My experience is that the companies are capable of building plant as cheaply as a good plant can be built.

Prof. PARSONS: Is it not true that a good many small places are supplied by the municipalities and are so small and unprofitable that companies would not undertake them?

Mr. HAWES: Yes. I firmly believe that.

Prof. BEMIS: How can we get the fact in regard to the claim that four Parish Councils of London which own their electric supply have dust destructors and do not charge themselves sufficient for fuel, but throw it into that account and make the Destruction Department pay for it—that is a charge made with regard to 4 out of 12 or 16.

Mr. HAWES: It was in the case of Hackney and I speak with some authority there, because we are the consulting engineers, and I represented my firm and I know that we pay the Public Health Department for the refuse exactly on the same basis as we should pay for coal if we used coal; in fact, we give them a slight advantage. The other cases are Fulham, Southwark and Shoreditch. I have not such complete knowledge of those undertakings as I have of Hackney.

Prof. BEMIS: It was claimed by one party that Southwark was losing money on its undertaking, so it had to depend on the rates which were paid by the city of London company. Now it is said that Southwark refused to buy current of the city of London at a penny a unit less than it could make it for.

Mr. HAWES: I think that offer was made for public lighting only.

*Question:* I believe it was made for supplying the County Council tramways—that is the way I understood it.

Mr. HAWES: I am sure it is not so. Several of the London Supply Companies jointly are supplying the London County Council with energy in bulk, but they are charging them at a pretty good rate for it.

*Question:* What are they charging?

Mr. HAWES: It is somewhat confidential information from the companies' point of view. They do not like it known what they are charging. But I may say that the figure is under 2d. and it is more than 1½d.

*Question:* Is it the practice where a Local Authority is operating an electric light and tramway undertaking, to charge the tramways a high price for electric current with the result that the electric light undertaking shows a good profit?

Mr. HAWES: No. The municipalities that own both services are charging most reasonable rates indeed for traction energy. I know of one case such as you speak of, but it certainly is not general.

## RECORDS OF ELECTRIC SUPPLY UNDERTAKINGS.*

(Westminster, May, 1906.)

*Summary of Financial Results of London Electric Supply Undertakings for the Year* 1903-1904.

| *Particulars.* | *12 Municipal Undertakings.* | *14 Company Undertakings.* | *Total 26 Undertakings.* |
|---|---|---|---|
| Capital outlay | £2,877,297 | £11,499,532 | £13,376,829 |
| Board of Trade Units sold | 27,271,640 | 87,198,560 | 114,470,200 |
| Gross Receipts from current supplied | £367,309 | £1,430,706 | £1,798,015 |
| Rentals and other receipts | £6,305 | £71,034 | £77,339 |
| Total receipts from all sources | £373,614 | £1,501,740 | £1,875,354 |
| Working Expenses | £194,040 | £720,969 | £915,009 |
| Gross Profits | £179,574 | £780,771 | £960,345 |
| Allowed for protection of Capital Assets | £46,063 | £169,793 | £215,856 |
| Net Profits for Interest and Dividends | £133,511 | £610,978 | £744,489 |
| Average Price per unit charged to consumers | 3.23d. | 3.94d. | 3.77d. |
| Average Working Expenses per unit | 1.71d. | 1.98d. | 1.92d. |
| Amount of Gross Profits per £100 of Capital | 6.24% | 6.79% | 6.68% |
| Amount allowed for Depreciation of Sinking Fund per £100 of Capital | 1.60% | 1.48% | 1.50% |
| Amount of Net Profits per £100 of Capital | 4.64% | 5.31% | 5.18% |
| Total Capacity of Plant in Kilowatts | 30,911 | 105,551 | 136,462 |
| Capital spent per K. W. of Capacity | £93 | £109 | £105 |

* Submitted by Mr. G. W. Spencer Hawes.

*Summary of Financial Results of Provincial Electric Supply Undertakings for the Year* 1903-1904.

| *Particulars.* | *169 Municipal Undertakings.* | *55 Company Undertakings.* | *Total 224 Undertakings.* |
|---|---|---|---|
| Capital Outlay | £23,636,444 | £4,571,470 | £28,207,914 |
| Board of Trade Units Sold | 276,315,736 | 31,349,393 | 307,665,129 |
| Gross Receipts from current supplied | £2,927,072 | £401,618 | £3,328,690 |
| Rentals and other receipts | £82,824 | £40,276 | £123,100 |
| Total receipts from all sources | £3,009,895 | £441,894 | £3,451,790 |
| Working Expenses | £1,422,994 | £205,296 | £1,628,290 |
| Gross Profits | £1,586,902 | £236,598 | £1,823,500 |
| Allowed for protection of Capital Assets | £573,545 | £38,778 | £612,323 |
| Net Profits for Interest and Dividends | £1,013,357 | £197,820 | £1,211,177 |
| Average Price per unit charged to consumers | 2.54d. | 3.07d. | 2.60d. |
| Average Working Expenses per unit | 1.24d. | 1.57d. | 1.27d. |
| Amount of Gross Profits per £100 of Capital | £6.71 | £5.18 | £6.46 |
| Amount allowed for Depreciation of Sinking Fund per £100 of Capital | £2.43 | £0.85 | £2.17 |
| Amount of Net Profits per £100 of Capital | £4.28 | £4.33 | £4.29 |
| Total Capacity of Plant in kwts. | 319,033 | 42,952 | 361,985 |
| Capital Spent per K. W. of Capacity | £74.1 | £106.4 | £77.9 |

*Summary of Financial Results of Electric Supply Undertakings, London and Provincial Combined, for the Year* 1903-1904.

| *Particulars.* | *181 Municipal Undertakings.* | *69 Company Undertakings.* | *Total 250 Undertakings.* |
|---|---|---|---|
| Capital Outlay | £26,513,741 | £16,071,002 | £42,584,743 |
| Board of Trade Units Sold | 303,587,376 | 118,547,953 | 422,135,329 |
| Gross Receipts from current supplied | £3,294,381 | £1,832,324 | £5,126,705 |
| Rentals and other receipts | £89,129 | £111,310 | £200,439 |
| Total receipts from all sources | £3,383,510 | £1,943,634 | £5,327,144 |
| Working Expenses | £1,617,034 | £926,265 | £2,543,299 |
| Gross Profits | £1,766,476 | £1,017,369 | £2,783,845 |
| Allowed for protection of Capital Assets | £619,608 | £208,571 | £828,179 |
| Net Profits for Interest and Dividends | £1,146,868 | £808,798 | £1,955,666 |
| Average Price per unit charged to consumers | 2.60d. | 3.71d. | 2.91d. |
| Average Working Expenses per unit | 1.28d. | 1.88d. | 1.45d. |
| Amount of Gross Profits per £100 of Capital | £6.66 | £6.33 | £6.54 |
| Amount allowed for Depreciation of Sinking Fund per £100 of Capital | £2.34 | £1.30 | £1.94 |
| Amount of Net Profits per £100 of Capital | £4.33 | £5.03 | £4.59 |
| Total Capacity of Plant in kwts. | 349,944 | 148,503 | 498,447 |
| Capital spent per K. W. of Capacity | £75.8 | £108.2 | £85.4 |

# MEETING OF COMMITTEE ON INVESTIGATION

## At St. Ermin's Hotel, London, June 28, 1906

## To hear Leading British Opponents of Municipal Trading

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Prof. Goodnow was chosen to act as chairman, and the following gentlemen were heard:

LORD AVEBURY (Sir John Luboock), F. R. S., D. C. L.,

Messrs. EMILE GARCKE, Managing Director British Electric Traction Co.,

WILLIAM L. MADGEN, Managing Director Brush Electrical Engineering Co., Ltd.,

CHARLES CHARLETON, Chairman London Chamber of Commerce,

SYDNEY MORSE, Chairman Municipal Trading Committee, London Chamber of Commerce.

The following is a fairly full resume of the hearing:

Mr. GARCKE (opening): I am Managing Director of the British Electric Traction Company. I have been interested in many concerns in this country for the last twenty-three or twenty-four years, and we have been very largely concerned in doing the pioneer work of the industries, always, I am sorry to say, under difficulties of a legislative and municipal character; and we have been surprised on coming into contact with the way in which local authorities followed up the business; but the question is so large that it is very difficult to deal with it satisfactorily in a general way, and to deal with it in a particular way necessitates the selection of special points.

Prof. BEMIS: You spoke of the difficulties that were put in the way of private Companies by legislation. I think that it might be well to know something of this.

Mr. GARCKE: I think on that particular point Mr. Morse can speak with more authority than anyone.

Mr. MORSE: With regard to tramways, there are two facts: The Act of 1870, which was to facilitate the construction of tramways, and it made the consent of the Local and Rural Authorities a condition precedent to the granting of the powers. The standing orders of the Houses of Parliament adopted the same principle, but went further because they made the consent of the Local Authority a precedent to the Bill. It cannot be brought before Parliament without the consent of this Authority. Unfortunately

here our Local Authorities have not acted as if they were in a judicial position, but bargained and sold for this consent. The Act of 1870 had one protecting element in favor of the Companies, namely, the Local Authority could not work a tramway. But just about the time when electric traction was coming in they were given power to work, and it became a question of whether it should be worked by a Company or not, and it made the thing much harder, because the Local Authority had to say whether they should have the power at all. Our Local Authorities deal with small areas. You cannot go over even a few miles without coming through the areas of many Local Authorities; but if you got the consent of Local Authorities for two-thirds of your proposal, it was not essential to get the remaining third.

A further point of the Tramways Act was that at the end of twenty-one years the Local Authority should have the right to purchase at the then value of the undertaking represented by merely its plant and machinery; and the principle applied to this purchase has been this, that when it purchases under the provisions of the Act the price is determined by what it would cost at the date of purchase to put down the undertaking which exists, less depreciation for the number of years from date when it was put down, so that you get a depreciated cost.

With regard to electric lighting, when the Act of 1882 was introduced, the same position was taken up by the Legislature. They gave the Local Authorities the right to work the electrical undertakings, or to purchase any undertakings at the end of twenty-one years on the then value of plant and material. That was such a deterrent that nothing was done. In 1888 it was amended to forty-two years against twenty-one, but unfortunately the consent of the Local Authority was made a precedent condition which was not the case in the Act of 1882. Again the Legislature has interpreted the Acts of 1882 and 1888 as giving the preference to the Local Authority to start electrical undertakings, and the consent has been a matter of bargain and sale. Any price of any such undertaking payable to the Local Authority was, in effect, to be paid by the public, and it makes the burden on the public heavier; for success entirely depends on whether the public want it. That about states the legislative position.

Prof. BEMIS: Was it the Act of 1888 that made the reason necessary in the case of tramways?

Mr. MORSE: No. The Act applied to electric light.

Prof. BEMIS: If you went through the areas of two or three Local Authorities with the wires you would need the consent of two-thirds of those Authorities?

Mr. MORSE: Of all. But there is power in the Board of Trade to dispense with the consent, but in early days they very seldom exercised that power.

Prof. BEMIS: Since when?

Mr. MORSE: In 1898 the power schemes first came up, and the question was then put by Parliament to a Joint Committee of

the two Houses to see whether there was such difference between a power scheme and an ordinary domestic scheme as would require different conditions for the power scheme; and the Committee reported that in the case of power schemes other conditions should apply. It reported, in fact, in favor of getting rid of the conditions as to consent and purchase altogether, but that has not been done as yet.

Mr. GARCKE: Many Local Authorities in early days applied for lighting orders not with the intention of carrying them out, but with the object of keeping the Companies out of the district, especially when they were owners of the gas works.

Mr. MADGEN: The Board of Trade dispenses with the consent very unwillingly, because the Local Authorities have great political influence. There is a body known as the Association of Municipal Corporations, consisting of the Town Clerks of municipalities and others. If one district is affected by the Board of Trade dispensing with the consent, a circular is sent round begging them to bring pressure to bear through local Members of Parliament, and the result is that you have a huge municipal machine opposed to electrical expansion.

Mr. MORSE: Under our provisional orders you can supply power for light and power, but in rather a limited district. When the proposals were made for supply in bulk a special Committee sat in 1898, and since then power was given to supply in bulk; but first it was limited to a supply to authorized distributors for electric lighting or traction. In some cases power can be supplied to the consumer.

Mr. GARCKE: Wherever a Local Authority has already obtained an order, the Local Authority has been successful in getting its area cut out of a power company's area. Lancashire, for instance, obtained an Act of Parliament to supply power in a large district. But Local Authorities, which had obtained a lighting order, were eliminated from the power in the area, like taking a plum pudding with all the plums cut out. There are a large number of districts where the Local Authorities have done nothing, and the Power Company thought they should negotiate with a view to bringing those areas into their supply area, with the result that Lancashire has five large plants erected and only one is supplying power—there is nevertheless a plentiful demand for electricity in these districts, so much so that I have been able to get them to sell me one of their plants because they cannot get a load. The Local Authority will not buy in bulk, and will not supply it to the consumer.

Mr. MADGEN: The Local Authorities say "We have put down plant with public money, and there must be no competition."

Mr. WALTON CLARK: We cannot obtain information of districts. They will not let others come in?

Mr. GARCKE: The Chairman of the Lancashire Company will give you this information.

Mr. WALTON CLARK: Has this appeared in any of last year's lists?

Mr. MORSE: The Bill last year was before Parliament and in the proceedings on that Bill a list was drawn up and it gives all the information.

Mr. GARCKE: The Bill is "The Administrative County of London Electrical Supply Bill."

Mr. MORSE: In the House of Lords. Mr. John Kennedy, of Abingdon street, Westminster, has the Bill in hand.

Mr. GARCKE: This was a tramway scheme. We had obtained the consent of all but one. This last saw the strength of their position. We could not complete the scheme without their approval, and the Mayor said: "These gentlemen cannot complete their scheme without our consent. They must understand it is our opportunity to bleed them." But we left them alone. The result is that their town is isolated. Parliament put on us the necessity to get their consent. They would not give consent unless we purchased the electrical energy from their electrical station, and the prices would have made the working of the lines unremunerative; and the price at which we were to be supplied was 2d. a unit. We brought it down to 1½d., but as that would have set a precedent for the price to be charged—a fair price would be 1d. or 1¼d.—we would not pay. Wolverhampton was the place. I have made the same statement before the Municipal Trading Committee of the House of Lords.

Mr. W. J. CLARK: With regard to the difficulties that you have recited as to Local Authorities keeping the community from having power, does it not also act in this way: If you have your station at a certain point and you start to run your mains, town A keeps you out, and even though you have secured a fair number of customers the burden of expense of reaching them for mains runs 3, 4, 5, 6 or 8 times what it would in America in similar conditions; is that not so?

Mr. MADGEN: The expense of mains is very much larger than in America.

Mr. MADGEN (in reply to question by Chairman): Towns will not let them in. You will see that the incursion of a governing body, such as a municipality, into trading has very curious effects. Wolverhampton stipulated to sell their current at an impossible price. In the case of a company they could not use that power because the municipality is in the electrical supply trade. Another case is that of Newbury, where they own the gas undertaking. There again, because they were in the gas trade, I could not get the electric lighting unless I would contract that my price would not be below their figure.

Mr. WALTON CLARK: Has that appeared anywhere?

Mr. GARCKE: Yes, but I cannot mention the name. But a very important place in the Midlands, where we have the rights, a point has arisen where the Local Authority own the gas undertaking, and they are seeking that we shall not bring the price of electricity below a point that would hit their Gas Works.

Mr. MORSE: When the Mond Gas was in progress Walsall town opposed, and passed a resolution in which they said that if the Mond Gas was brought into Walsall it would result in the municipal supply being run at a loss, and they would not allow it.

Mr. GARCKE: The Southend Corporation owns tramways, and for some time past a Motor Omnibus Company has tried to establish a service. The Southend Corporation, as owners of the tramways, have prevented the Motor Omnibus Company from plying for hire. The Omnibus Company have run their omnibuses, but they have taken no payment for the fares but sold tickets.

Mr. MADGEN: Take the case of Birkenhead. Birkenhead is one side of the Mersey and Liverpool on the other. The railway between them runs through the Mersey tunnel. The Birkenhead municipality owns steamers, running to Liverpool, and have established a tramway service in Birkenhead running in conjunction with the steamers, and avoid as far as possible giving facilities for the interchange of passengers between their tramways and the railway which competes with their steamers. The Railway Company, in order to counteract that, sought powers to run a service of motor omnibuses to bring passengers to the railway station on the Birkenhead side. Thus you will see the municipality's having gone into the Steamboat Trade has had the effect of preventing the railway company's affording a service of motor omnibuses. The municipality has obviously misused their powers, and the position is Gilbertian, but they have the weight in Parliament of the Association of Municipal Corporations.

Mr. MORSE: In our country the Local Authorities are the licensing authorities for hackney carriages, and if the Local Authorities are running their own they do not like to support their rivals' carriages.

Prof. PARSONS: What would a private company do if it were in the position of the Municipality?

Mr. GARCKE: A Company possessing the same authority would not regard with indifference the advent of a competitor, but they would not possess the veto upon the competitor coming in.

Prof. PARSONS: I understand that; but is it any particular iniquity attaching to the Municipality, or would a private individual do the same?

Mr. GARCKE: It would endeavor to obtain the same terms, but they do not combine the judicial capacity with the trading instinct, therefore, the private Company doing its best to obstruct the competitors' incoming would be controlled by the Local Government, and we have had cases of that kind where the Tramway Company would object to a competitor coming in. But then we go to Parliament and would be heard, but would not have the power to obstruct a new comer. In the other case they have the power to prevent you going to Parliament. We cannot go to the Board of Trade without the consent of the Local Authorities, if the Local Authorities exercise their veto; consequently, to give Local Governing bodies the powers against competitors is much more detrimental than if the power were in the hands of Companies.

Prof. COMMONS: Need you have rights under these Acts in the locality; are their rights exclusive?

Mr. GARCKE: No, they confer no monopolies, but in the case of tramways they are practically monopolies. This is shown in the case of the power station in London. All the powers were obtained for forty-two years (they have 25 years to run). They were confined to small municipal areas which are not large enough to admit of economical supply. It must be done from one centre, and last year a Bill was started to supply in this way. They did not get their Bill. This year the London County Council promoted the same scheme which last year they opposed, not so mature a scheme but nevertheless it will compete with the existing Companies, and, unless some clauses are put into this Bill of a protective character, the London County Council will be in a position to utilize those powers to depreciate the value of the Company's concession, and they will be at the mercy of the London County Council.

Mr. SULLIVAN: Then it will be best to let the London County Council get it?

Mr. GARCKE: No doubt the effect will be, if they get the Bill, that the Company will not be able to spend more capital, because they will have no security of tenure and will not anticipate being fairly treated by the London County Council.

Lord AVEBURY: Municipalities have most important functions. The same body cannot govern a trade. If you once mix up the question of trading and the question of government it will be very prejudicial to both. All monopolies are bad, but those of municipalities and governments are worst of all. In the case of the supply of water in London, it was managed by Water Companies. Then it was controlled by the London County Council, and they were very strict in keeping up the purity of the water, but now you have no outside authority to guard the purity. The development of tramways and electric lighting has, in my judgment, been much retarded. Personally my interests are with those of the public, and my main action all through has been in the interests of the public. It is also very undesirable to increase unnecessarily the number of municipal employes. Progress in private enterprise has been and will be much checked by municipal trading. Many years ago I took a part in the introduction of electric lighting. My colleagues were fully persuaded that towns that worked the gas themselves looked on us as dangerous opponents. On the contrary, when the Gas was worked by Companies they gave every facility. One gentleman has asked if a private Company would not do the same. It might if it could. The Municipal Authority can, and that is where the difference comes in.

Prof. COMMONS: Supposing you are going into a locality where there is a private supply company having the field, not a gas company, but an electrical company, would not you find it necessary to make some arrangement that the private company purchase, or some arrangement so that they should not oppose it?

Mr. GARCKE: Some reasonable arrangement with them. In the case of a Local Authority you have no opportunity of making a reasonable arrangement because they will not be reasonable.

Mr. MORSE: A competitor has not a locus standi to oppose as a right, only a discretionary locus standi. The Committee of Parliament may say, "We think you may oppose." But the Local Authority has a veto.

Mr. MORSE: A Company carrying on a business in a town, a second Company wanting to do so in the same town, they are like two ordinary shopkeepers. If a man can get a shop he can open a business. If the Local Authority is the competing trader, the Authority can veto it.

Prof. PARSONS: Do you believe in competition as the solution of this public service problem?

Mr. MORSE: I do not think competition is fair when the Local Authority raises capital on the rates and can pay losses out of the rates. I believe in Free Trade in these matters. Those who go into the trade ought not to be competed with unfairly by others being put in a different position.

Prof. BEMIS: Existing tramways have rights. Would you allow others to come and tear up the streets and put in wires and so on?

Mr. MORSE: Subject to its being fair.

Prof. BEMIS: Historically that has ceased to exist in the case of Gas Companies.

Mr. MORSE: Under strict regulation as to price and dividend, etc.

Prof. BEMIS: You think it right?

Mr. MORSE: I think it in the interests of the public to see that they get it at the lowest price, if there is no competition allowed. I think there are objections to having half a dozen sets of mains in the street if it can be all done on the best terms to the public by one, but where there is actual or a possible competition it is better to have the right to put in a third person.

Prof. PARSONS: Were you speaking of lighting as well as trams?

Mr. MORSE: In the Electric Lighting Act consent is a precedent condition.

Prof. PARSONS: Cannot you go direct to Parliament?

Mr. MORSE: You cannot go direct to Parliament. I cannot say there is an Act saying you shall not, but the Government has always said having given the administration to the Board of Trade it will not introduce a Bill for the same thing. A power company was entitled to take a limited supply to light its own factory, to get over the difficulty of A Company having to go to B Company for its light.

Mr. MALTBIE: No private Bills?

Mr. MORSE: They are always stopped by the officers of the House if introduced. If the Local Authority brings in a Bill for forty or fifty different points, it may get some provision for electric

lighting into the Bill, but it is an exception. But in the case of tramways a Bill introduced into the House of Commons has to prove compliance with the Standing Orders before reading a first time in the House. But with regard to tramways, one of the Standing Orders is, that the Road Authorities shall have given consent, and until that is proved the Bill is not allowed to proceed. An Act of Parliament is a very expensive matter. The smallest Act of Parliament would cost £1,000; a Provisional Order costs £300 at least, but the Provisional Order procedure is much less expensive than a Bill.

The CHAIRMAN: Is it more expensive in the case of a Municipality?

Mr. MORSE: There is no difference; the fees are the same to each.

Mr. CHARLTON: I speak here not as the Chairman of the London Chamber of Commerce, but as an individual and especially as a manufacturer. The main point before me as a manufacturer is this, that I do not think any of us in this League seek to interfere with what are the legitimate functions of a municipality. I ask anyone at this table: Which body is more capable of carrying out engineering, technical, various industrial works, a body of men who have been brought up to that business, who have gone through a particular training since boyhood, and gone through the various stages of the business before they could take a leading part in it, who have put money into it and backed their opinion with their money; or a body of men who are elected year by year, who have businesses of their own to look after, and who have no responsibility beyond their period of office—the persons who have been brought up to it, or those who are occupying temporary positions on public bodies?

Then there is the question of responsibility. Those who are Directors of large concerns are responsible to shareholders. Members of local bodies frequently attend meetings after a day's work, and having no responsibility and no capital invested whatever, yet spend millions out of the rates, and if anything goes wrong you cannot get at them. The answer to that of course is, that the remedy is in the hands of the ratepayers. But the ratepayers do not always exercise their rights. Then the question of voting—we have fought against employes of corporations (companies) having a vote; I do not think any man should have a vote who is so employed. Men elected for a short time to municipal bodies are distinctly out of place if they indulge in municipal trading. To give one or two concrete instances—at Brighton, where I happen to live—we have Brighton and Hove. A short time ago the British Electric Traction Company had a short piece of line to loop up through the municipality of Hove at the back; it would have interfered with no one, but it crossed the borough. The municipality put in an opposition to their Bill in the House; and brought in a Bill in which they proposed to lay down tramways which would have ruined the municipality, because it is a purely

residential neighborhood. In this case the ratepayers were alive to their interests; on a poll of about 7,000 we beat the Municipality by over 1,000, and they had to withdraw their Bill. This shows that ratepayers can control these things if they choose to. Then there is the Brighton Tarmac case. On that I will not give an opinion because it is still sub judice; but the reports of that case are a very good object lesson; I would like you to read them. In the case of the South Essex Water Works, the Company was formed in 1861 under an Act of Parliament which gives the safeguards Mr. Morse has just mentioned to the public in schedule rates, etc., and which prevented this company from doing anything against the interests of the public generally, and of course all the capital was arranged in the Act. In due course of time, with the development of the district, which was rapid and large, the Company required to go to Parliament for fresh powers. They did so in 1882, and obtained their fresh capital and went on again till about 1900 or so, when it was necessary to repeat this operation. They wanted further powers and a larger district. They went again for a third act. A collection of local bodies who imagined they could do the work better than those who had been at it since 1861, combined to take over the water company, and opposed their Bill, although the company had fulfilled its statutory obligations. The Bill went before a committee of the House of Lords and was thrown out on a pledge by these combined councils to bring in a Bill to cover the same district in the following session. Both Bills came before Parliament—they were both of a very heroic nature—they were brought before a committee of the House of Lords, but were so intricate and so difficult that they were both thrown out, and in the meantime the ratepayers became alarmed at the amount of money being spent. In the third session something in the nature of a compromise was arrived at, and the water company got their Bill. All that time the district was crying out for more water. The result was that the Bill dragged through three years before the company got it, and I think the total cost to all parties was nothing less than £50,000, of which the largest proportion fell upon the ratepayers.

Prof. PARSONS: If I might ask Mr. Garcke one question, what is his idea of the best plan for dealing with the electric light supply here in London. Here we are all divided up between municipalities and companies and it seems to be in a bit of a mess. We have heard that you have a comprehensive plan which might deal with that problem in a much better way than it has been dealt with.

Mr. GARCKE: That question is answered by the decision which two Committees of Parliament have already given last year. It was referred to the House of Lords and after long sitting that committee reported in favor of the Bill with certain modifications. Then it was referred to the House of Commons committee. It was supported by that committee after a long hearing with certain modifications, but the long inquiries had carried the Bill over the

time which was available in Parliament, and the committee did not report until one day before Parliament adjourned, and too late for the third reading of the Bill, and the Bill was lost for that session, although a very considerable sum of money had been expended by the promoters. £50,000 was expended in bringing it to that report stage, and so the question was answered by the inquiries held by the Parliamentary committees. That Bill was the best solution; it was a company bill, and it protected the interests of the companies and the Local Authorities. Many of the companies had arranged to take power from the new company in bulk. It induced the London County Council to bring forward a hurried measure asking Parliament to place power supply in the hands of the London County Council, and the present Parliament decided that the Bill should be put into the background, preference should be given to the London County Council Bill. The London County Council has been before Committee many weeks, and the committee are giving their decision this morning, and I believe it will be against it on the ground that it is not bold or comprehensive enough. They did not deal with the problem in an adequate way, but it is too late for the Administrative County Bill to be proceeded with.

Prof. PARSONS: Have you not written something on the subject?

Mr. GARCKE: In one of the articles for the "Times" I made the suggestion that if private enterprise is to be discouraged—and in the present political situation private enterprise has very little chance—the London County Council control is not the best alternative, and the London County Council Bill would have the effect of stopping the development of electrical supply. Therefore, I said, we must look out for some other arrangement which will secure the development of the electrical industry. I would prefer private enterprise, the administrative company, or some other scheme which would consolidate the different interests; but if that is not so, I suggested it that a Board should be formed on the lines of the Metropolitan Water Board which should take over the whole of the existing electric lighting undertakings, both of the Local Authority and of the companies, solely to deal with electricity, not like the London County Council impeded by a multitude of other bigger schemes. The London County Council cannot raise the money necessary for the electrical supply; they have to spend ten millions on tramways, considerable sums of money on other matters, and we have it on the authority of the Chairman of their Finance Committee that they ought not to take up fresh enterprise till they have dealt with the things they have in hand. Therefore I said you must have a separate Board to raise capital at low terms, and at the same time acquire existing undertakings and develop the business on its merits, and not on the merits of many other schemes.

Mr. SULLIVAN: You recognize the difference between ownership of electric lighting and power, and ownership in ordinary private industries. You acknowledge the necessity of a greater regulation and control of the authority?

Mr. MORSE: In the case of quasi-monopolies, it is necessary to have someone to regulate or control them.

Mr. SULLIVAN: As to the price of the product?

Mr. MORSE: My view is that if the Local Authority adequately perform their duty as controller they would do a great public service. It is quite clear that owners of something in the nature of a monopoly ought not to be able to charge exorbitant rates and give a bad supply.

The CHAIRMAN: Under the present system is there any control exercised by the Local Authority where it goes into this business?

Mr. MORSE: To this extent, that Parliament regulates the price and gives the Local Authority permission to apply for a revision of price. But our experience has been that the Local Authorities will give you any consent required if you give them an equivalent in cash down.

The CHAIRMAN: Is there any control of the candle power?

Mr. MORSE: There is an inspection.

Mr. WALTON CLARK: Is it governmental or municipal?

Mr. MADGEN: It is anomolous. The inspector is paid by the Corporation, but his duty is to report upon the Corporation.

Mr. MALTBIE: He is a man of some standing?

Mr. MADGEN: He is a municipal nominee.

Mr. SULLIVAN: Mr. Morse, in the case of control merely, is the tendency of private enterprise to spread over large areas? Take the case of the South Lancashire tramways. It has a large area between Liverpool and Manchester. Do you know the process by which it has gone into business?

Mr. MORSE: It has always had to get its consents. It has paid dearly for them.

Mr. MADGEN: Comprehensive schemes are, however, in the best interests of the public.

Mr. SULLIVAN: Is not that the practice with municipalities?

Mr. MADGEN: For obvious reasons they are very rarely empowered to go beyond their municipal boundaries, which were settled in Saxon times and have very little reference to existing requirements.

Mr. SULLIVAN: In reference to Leeds, Huddersfield and Halifax, did a private enterprise go and try to join up the whole system?

Mr. MADGEN: Yes.

Mr. MORSE: The Local Authority is not interested in loss or profit, it is interested in the facilities of the occupants of the places where they live, and the money raised is trust money. Trust money ought not to be invested in a speculative business. Battersea has a population of 300,000. They have spent £100,000 in electricity supply and made a loss for the year, but there are only about 500 people in Battersea who take a supply; that is, the Corporation is borrowing on the security of all its ratepayers in order to give electricity to very few ratepayers, and charging the

loss made by the supply to all the ratepayers? If a Company has made a loss, it would have got the electricity all the same.

The CHAIRMAN: Are returns from municipalities reliable?

Mr. MORSE: I should not like to say they have been fraudulently drawn up, but I do not think they are to be trusted as full and complete accounts of the trade. For instance, Leeds spent £300,000 on tramways, and at the same time £300,000 on street widenings which were solely made for the purpose of the tramways. Now not one sixpence was charged to the tramway account.

The CHAIRMAN: What is the policy of the municipality where the private Company comes in?

Mr. MORSE: The Company would have to widen the streets; but at Leeds you find only one £300,000 charged, and it ought to have been £600,000. You cannot say that the total expenditure was charged unless you have both items. Then in South Shields they spent £100,000 or more, and for the first three years no charge was made against the electric lighting undertaking in respect of the Town Clerk's Department, although they had given a deal of work, nor the Engineer's Department, nor the Accountant's Department, although they all had been employed on the work.

The CHAIRMAN: It is the policy of the Corporation to charge each department with what it has to pay. If it is in the electric light business it will receive an amount of money for the Committee for lighting the streets. Is it the case that that charge is made on a commercial basis, or is it made so high as to make the electric lighting profitable?

Mr. MADGEN: That is very general. We are very glad to get £16 per annum for an arc lamp in the streets and £16 or £17 is a reasonable price, but the electric lighting accounts are very commonly credited with £20 to £25 per annum. This is a matter of record.

Prof. PARSONS: On the question of street widening, what is the situation?

Mr. MORSE: In London the London County Council is the tramway authority and they divide it into thirds. They say the Local Authorities must pay one-third, so that that is out of the public funds.

Mr. MALTBIE: Do you know of cases where the Municipality in provincial towns has charged any portion of the street improvement to the tramways account?

Mr. MORSE: The principle largely adopted is that the street widening is a public improvement and it is not wholly necessary to tramways, but the Chairman asked whether the accounts were fully made out.

Mr. MALTBIE: Are the accounts of no use? Should they be charged with the extra street widening?

Mr. MORSE: I would not go as far as that. We may always claim that if street widening is necessary the result is partly im-

provement, and it should be adjusted reasonably; but whatever the Company has to pay on street widening is necessarily part of the expenditure of the Company for the particular purpose of the tramway. Similarly I think that Corporation accounts should show a similar sum.

Mr. MALTBIE: How much should the undertaking bear?

Mr. MORSE: It is very difficult to say in all cases.

Mr. WALTON CLARK: Would not the matter have to be settled according to the particular locality and the surrounding conditions? A tramway Company might come to a place to run its rails through where there was a public necessity for the widening of the street. In that case the proportion would be one thing. In another case where there was no necessity for anything but the tramways it might be quite another.

Mr. MORSE: I quite agree.

Mr. SULLIVAN: At the Municipal Tramways Association it was stated that eight cases had shown a deficit.

Mr. MORSE: We put the matter to a joint Committee on Municipal Trading and it was considered desirable to have an audit.

The CHAIRMAN: There is no audit?

Mr. MORSE: There is very little audit. Boroughs audit by elected auditors, and in Westminster a friend called my attention to a coster in whom he seemed interested. I asked him, "Why are you interested in that man?" and he replied, "That is one of our auditors."

Mr. MALTBIE: Were there no other audits?

Mr. MORSE: I am speaking of boroughs. They still have elective auditors.

The CHAIRMAN: And there are no other auditors?

Mr. MORSE: There is the Mayor's auditor, but there are no audits by chartered accountants.

Mr. MALTBIE: In none of the towns?

Mr. MORSE: Plymouth was discovered to have spent moneys authorized for one purpose on quite another. But speaking generally the audit is very slight. We have a barrister sent down about a year afterwards, and he audits. He is not an expert.

Mr. MADGEN: It is beginning to be felt by those engaged in private enterprises that any industry in which municipalities become established is a very good one for the private trader to be out of. It is a rather serious but sincere statement. We find in tramway work they establish labor conditions which sooner or later become imposed by pressure on private undertakings, and these are so onerous as to seriously handicap the private enterprise, and on some municipalities you have representatives of the employes of the Corporation. At Newcastle-on-Tyne I think the Secretary of the Tramways Workers is on the Municipality and he takes their part in the Councils of the City. Newcastle tramways are not paying and the existence of high wages there is bound to have an effect on the surrounding districts.

The CHAIRMAN: Have the municipal employes shown any tendency to control the Council?

Mr. MORSE: Manifestly.

Mr. MCNULTY: Did these members of the Councils take more active interest than others represented on the Council?

Mr. MADGEN: Not yet; but as the numbers go on they will, because it is very difficult for a sincere citizen to maintain his position on the Council. If he does not choose to assist the labor party, it is made unpleasant for him.

Mr. MCNULTY: The labor members merely try to get laws enacted that will compel the municipal government to pay the employes of the tramways, gas works and water works the standard rate of wages. Is that not a fact?

Mr. MADGEN: If you give to the word "standard" a very flexible meaning you are right.

Mr. MCNULTY: The standard is set by the recognized rate of the Trades Union?

Mr. MADGEN: That is one-sided. They want to get as much as they can. You cannot get more out of a concern than it will stand; but in the case of municipal undertakings there is the whole of the pockets of the ratepayers to pull at.

Mr. MOFFETT: They do not attempt to raise wages above the rate generally applied by the Trades Unions?

Mr. MADGEN: Broadly speaking, they are trying to get what they can without reference to what it will stand.

The CHAIRMAN: Where carpenters are employed by the City are they paid any more than that outside by the master carpenters of the Union?

Mr. MADGEN: Not yet, I think.

Mr. MADGEN: I should think the municipalities do not pay a higher rate for carpenters, etc., than the private firms do—than we do at our works—but the class of trade which they are in requiring the greatest body of men is the tramway trade. They may have a thousand tramway conductors and drivers, that is pretty nearly a thousand votes. They bring their influence to raise their rates above the proper economic limit. In the case of a private company, the company would fail.

Mr. SULLIVAN: It would not mean having all labor as well paid, as labor would admit.

Mr. MADGEN: It is discriminating between the different classes of labor.

The CHAIRMAN: What about disenfranchisement?

Mr. MADGEN: There is a feeling that that is a last resort. I do not like the idea of disenfranchising any man. I feel that every man is entitled to a vote; but if the thing goes very much further then the idea may get adherents.

Mr. SULLIVAN: Has there been any movement on the part of employers among their own men?

Mr. MADGEN: No.

Mr. MCNULTY: Is there any chance that the tramway men are not properly organized? Is there not just as much chance for the employes of a private corporation to be organized as of a municipality?

Mr. MADGEN: No. We employ 2,500 men at our works in Leicestershire. We do our best for them; but many of them have their own union, and we are not on their council, and they are not on ours. When disputes arise we meet the men and discuss matters, but we each have our own board. We should be a house divided against itself if there were a representative of theirs on our board.

Mr. MCNULTY: If the labor man takes up an arbitrary position, the representative of the corporation would be there to object if necessary, as in the case of a company?

Mr. MADGEN: Yes. But in Loughborough we pay a considerable proportion of the rates of the town; but we have no vote at all, even in the elections.

Mr. MOFFETT: What reason have you, Mr. Madgen, to think you should have a vote?

Mr. MADGEN: I do not ask for it.

Mr. MOFFETT: Then you do not complain of not having one.

Mr. MORSE: I think every person who is a ratepayer should have a vote.

The CHAIRMAN: Is the administration as efficient by the Corporation? Do they look after the funds as well as a private Company would?

Mr. MADGEN: I do not think they are so mobile or resourceful. They do not adapt themselves to varying conditions.

Mr. SULLIVAN: Aside from the labor item, are there any comparative records of work done by municipalities and that done by companies?

Mr. MADGEN: Yes. Take electric power supply, the Tyneside district is one of the very best in England, and the people are fairly broad-minded. Private enterprise is encouraged there rather more than elsewhere in England, and the result is that impediments have not been so prominent as elsewhere, and a very large electric power scheme has been organized in that district. It extends over three counties from Northumberland to Yorkshire, and electricity is much cheaper there than in any other part of the country. The North Eastern Railway takes its supply for electrification from the Company.

Prof. BEMIS: How do you explain the fact that some of the other supply companies had equal rights from Parliament that they did not develop?

Mr. MADGEN: That is true in one sense but not in another. Mr. Gareke has described the condition in Lancashire. The result is that Lancashire power scheme was mutilated.

Prof. BEMIS: Is that true of all the power companies?

Mr. MADGEN: No. The North Metropolitan Power Company has equal privileges, but not such a fine area—and, substantially, we have only been at work about a year. However, we are giving very great benefit to that district already, and there is no doubt that when we have established cheap rates we will be able to induce manufacturers to move out of London to us.

Mr. MORSE: Where the power supply is in the hands of companies, the companies are quite prepared to make business bargains, but the Local Authority is very keen on having its own station. The Local Authorities are always liable to refuse to give consent.

Mr. W. J. CLARK: In view of your statement that you are charging the North Eastern Railway a halfpenny a unit, why is it that some of the larger municipalities such as Liverpool and Manchester are charging so much higher a figure to their tramways? Are not the labor conditions as favorable for cheap power development in Lancashire and Yorkshire as in the Tyneside District?

Mr. MAGDEN: They ought to be.

# ADDENDUM*

LONDON, 29th June, 1906.

MY DEAR SIR—

At the request of the Chairman and members of your Commission, whom I had the pleasure of meeting yesterday afternoon, I set down in writing a few observations which I have to make on the subject of your Inquiry.

I understand that your Commission is anxious to form a judgment of the comparative efficiency of public services conducted by the Municipal Administration, and those in the hands of private undertakers. It appears to me that you will find a very great difficulty in making such a comparison, for the reason that the circumstances of the two forms of trading are not conditioned alike. The power of the local administration, which it should be observed, is more absolute within its own jurisdiction than that of the central government, and is able to obtain almost any concession it chooses from Parliament, is freely used for the purpose of removing from the path of the Municipal undertaking many obstacles and occasions of expense which private undertakers would have to put up with. There are many instances of this preference which have no doubt been mentioned to the Committee. I venture, however, to call attention to the following:

(1) The Public Authorities Act, 1893. This Act passed by Parliament under pressure of the Municipal Association, prohibits any action being brought against a Corporation—for instance, by a person injured on a Borough Tramway—more than six months after the accident happening, whereas if the accident had happened on a Company's Tramway, the injured person would have had six years in which to bring action. Further an unsuccessful plaintiff against a Corporation is penalized by having to pay to the Corporation a higher scale of costs known as Solicitor and Client costs. Costs are never awarded on this scale as between ordinary parties, and the Courts have a certain discretion to withhold any costs altogether in the case of ordinary litigation. There are other special provisions in the Act which make litigation with a Corporation most risky and costly.

(2) Another most important Statutory indulgence to the Municipal Trader is that contained in the Trustee Investment Act, which makes the Stock of a County Council and any Municipal Borough having a population exceeding 50,000 available for the investment of any Trust Funds.

* The following letter, from the Solicitor of the Great Central Railway, was added to these Proceedings by order of the Committee of Five.

time Adam Smith was one of the Professors. The precincts of the University were outside the jurisdiction of the Corporation, and hence it was that Watt was left unmolested to complete his valuable invention. This and other abuses of the old trade-elected Corporation led to the Municipal Corporations Act of 5 & 6 William IV. Cap: 76, the 14th Section of which reads as follows:

> Be it enacted that, notwithstanding any custom or By-laws, every person in any borough may keep any shop for the sale of all lawful wares and merchandise by wholesale or retail, and use every lawful trade, occupation, mystery and handicraft for hire, gain, sale or otherwise within any borough.

The spirit of this enactment is directly contravened by the principle of Municipal Ownership, whose advocates always insist on an absolute monopoly for any concern in which the ratepayers' money has been invested. The consistent and steady opposition of the electrical owning Corporations to the Electric Power Bills is a flagrant instance of how Municipal Ownership induces these bodies to offend against the spirit of the Municipal Corporations Act, and return to the policy of oppression and restriction to which their predecessors, the Guild-elected Corporations, were so addicted.

Now I should like to submit to the judgment of your Commission this proposition: Do not these facts which I have mentioned constitute in effect a confession by the advocates and followers of the practice of Municipal Trading that that form of corporate enterprise has failed as trading? The following is my argument:

If Municipal Trading was successful we should have the capital for it raised on its own credit. There would be Muddlepool Gas Stock and Puddleton Electric Stock. There is no legal difficulty in such a method of finance, for the London Water Board has adopted it, taking the water rates established by the long and successful history of the Water Companies as a sufficient financial basis. Why is it there are no similar stocks amongst all the hundreds of millions of Corporation securities? For the simple reason that all the world knows that, while a Company's electric works or gas works would very probably be conducted with due efficiency and economy, and so yield a return on the money invested, such a result for a Municipal enterprise of the same kind would be so improbable as to be beyond the utmost stretch of the credulous investor's imagination. The fact that Corporations have to buoy up their securities by adventitious aid of the ratepayers' liability, and the legislative credential of the Trustee Investment Act, amounts to an admission on their part that their commercial tubs cannot stand on their bottoms, in fact, that their trading is a failure.

Again, if their enterprise were really capable of rendering an efficient public service, why should there be this continual running to Parliament to defend them against competition? Why at the present time are the full forces of the Municipal Corporations Association marshalled in battle array to prevent the Mersey Railway Company and the Wirral Railway Company from obtaining

power to run Motor Omnibuses which might empty the Corporation Tramcars? If the various Corporation electricity works were capable of holding their own in the stress of scientific and commercial necessities and developments, why do we find the Corporations and the Municipal Corporations Association persistently opposing every scheme that is being brought into Parliament for the distribution of Electricity on a large scale? The promoters of these schemes are not afraid of the competition of the Corporation, why should the Corporations be afraid of them if it were not that they knew that the municipal ventures were a trading failure?

If ordinary traders are content with the ordinary standard of justice to be obtained from the Courts, and the Committees of Parliament, why must the Municipal Traders have the special privileges of the Public Authorities Act, and the intervention of the specially whipped Borough Members, to deliver the Municipal Traders from the decisions of those tribunals?

Clearly a Municipal undertaking is a craft which cannot live in the open sea, but has to have breakwaters constructed for her protection. She stands condemned by her own designers, who themselves show such lack of confidence in her seaworthiness. As to her ship's company, it is hardly to be expected, when they never go out of sight of land, that they will maintain the same standard of efficiency as is compelled by instinct of self-preservation in the crew of a vessel which has only her own resources to rely upon for keeping above water.

The fact is that Municipal Traders have forsaken the standard of industrial and financial success, and adopted instead the shelter of legalized monopoly and compulsory subsidy. They have forsaken the service of the public at large and are catering for any section of the community, however small, who may have influence enough to help themselves to a facility such as Telephones or Parcels carriage, or Hydraulic power by the aid of the public purse. They have forsaken the idea of democracy; their funds are largely derived by taxing those who are not represented, for in many cases the larger portion of the assessable property is owned by Companies and others who have no vote at all. They have thrown overboard the standard of justice, for there is no justice in raising a large fund by taxing, for instance, railway property in order to establish a carrying business which can have no purpose except to reduce the just railway earnings. They have forsaken the idea of local self-government, for there is nothing local in the bureaucratic ring which whips the Member for a Scotch Borough to vote against an Electric Power Scheme for Ireland. There is nothing autonomous in placing the community in bonds of debt to outside capitalists who are placed in the position to dictate the raising of rates in the Borough for generations ahead. They have raised the cost of all production by depriving the industries of cheap power facilities, which but for their interference they would long ago have had. They have raised rents by discouraging the building of working class houses by private persons who hesitate to compete with the

rate-provided house of the Municipality. They have lowered wages by draining the capital resources of the country into Borough Treasuries, and thus both diminishing employment by creating an artificial scarcity of capital in the industries, and reducing the share of labor by increasing the price of money. They have destroyed the independence of thousands of workers by turning them into Municipal officials. They have lowered the function of the Capitalist by relieving him of responsibility, and consequently of the necessity for bold and shrewd adventure. They have abandoned the idea of the greatest good of the greatest number, and zealously promoted the greatest good of the money lender.

I sincerely hope that your Commission will think a good many times before they take the responsibility of advising the public of the United States to embark on the seductive but slippery slope of Municipal Trading.

I am,

Yours faithfully,

(Signed) DIXON H. DAVIES.

DR. MALTBIE,
9 Arundel Street, Strand W. C.

# BRITISH TRAMWAY HISTORY

By FRANK PARSONS

To ascertain the effects of public and private operation of tramways in Great Britain, we shall first review the history of British tramways, then examine the causes and effects of the change from one form of operation to the other in the cities selected by the Commission for special investigation, and finally study the contrasts between existing public and private systems in the selected cities.

## I—GENERAL ACCOUNT OF THE MUNICIPAL MOVEMENT.

In a dozen years municipal operation of street railways in Great Britain has grown forty-fold; from 3 public systems in January, 1894, to 123 in March, 1906 [1]; from 2 per cent. of the whole number of tramways in the Kingdom in 1894 to 49 per cent. in 1906.[2]

Prior to 1894 only three municipalities, Huddersfield, Plymouth and Blackpool, had adopted municipal operation of tramways. In 1894 Leeds and Glasgow established municipal operation. The marked success of their experiments gave the movement for municipalization irresistible momentum. From 1896 to 1898, inclusive, eleven cities adopted the same policy.[3] The data for 1906 show that municipal operation has been adopted by more than seventy of the leading cites and towns, including all the principal cities of the United Kingdom, except Dublin, Bristol, Norwich and Edinburgh,[4] and the total number of local authorities operating

[1] The data as to tramway development are from the annual returns of the Board of Trade to the House of Commons, as published in the Parliamentary documents.

[2] The Board of Trade returns dated 1894 show 3 municipal systems at the beginning of that year out of a total of 153 tramway undertakings, and 25 miles of line operated by the municipalities out of a total of 975. The full data for 1906 are given on a later page.

[3] Sheffield, Dover, Hull, Halifax, Aberdeen, Blackburn, Bradford, Liverpool, Nottingham, Southampton and London, all above 100,000 population except Dover and Halifax, and aggregating 6,668,000 population for the group.

[4] Edinburgh, in December, 1903, bought 11.7 miles of the 18.4 miles operated by the tramway company, but leased the roads for operation. In the session of 1897, the city obtained authority from Parliament to work the tramways, and is quite likely to take them over when the present lease expires. Bristol also will probably buy and operate the lines at the expiration of the company's franchise. Norwich seems almost sure to follow the same road, and even Dublin may in time join the procession, although the present company management there is far above the average.

their tramways was 123 against 127 private tramways, with 1,273 miles of line operated by municipalities against 936 miles still operated by private companies.

Municipal *ownership* of tramways has prevailed in Great Britain from the early years of the industry. A large number of towns and cities built their own lines, and another considerable number purchased the lines from tramway companies, and in 1906, 175 tramway and light railway (interurban) undertakings, with 1,491 miles of line and 2,499 miles of track, were owned by local authorities against 137 company undertakings with 748 miles of line and 1,092 miles of track—over half the undertakings and two-thirds of the mileage being public property. In 1883 municipalities owned less than 25 per cent. of the tramways; in 1896 they owned 26 per cent. (37 in a total of 153 and 335 miles of line out of 1,009 miles total); in 1905 they owned 54 per cent., and in 1906 their holdings rose to 56 per cent. of the total number of undertakings.

The Tramway Act of 1870, under which tramways are usually constructed,[5] made it easy for municipalities to build or buy, but expressly precluded municipal operation. Parliament so fully recognized the right of a municipality to control the use of its streets that it required the companies to obtain the consent of the local authority in every case before the company could apply for an order (from the Board of Trade) permitting it to build a tramway;[6] and it further provided, not only that municipalities might build and

[5] The Light Railways Act of 1896 has also been used to some extent for interurban lines. This act escapes the purchase clause of the Tramway Act. A light railway must be bought as a going concern. No consent of the local authorities is necessary, but the Commissioners give great weight to what the local authorities say.

[6] In view of this law and the general attitude of Parliament toward municipal questions and the policy of municipal home rule, some of the favorite contentions of those opposed to municipal ownership in Great Britain are that Parliament favors municipalities, even making the consent of local authorities necessary to a tramway order or the introduction of a tramway bill, and that the cities have united to carry their measures in Parliament and have enormous influence with that body.

It is refreshing to find a legislative body in which the people constantly have more influence than the companies. In this country it is the public service companies that unite to carry their measures, while our cities have not yet learned to organize or work together for their common interests. We believe it to be perfectly right that Parliament should require the consent of local authorities to tramway franchises, and otherwise favor municipalities as against private companies where their interests conflict. The municipalities represent thousands of people where the companies represent tens and hundreds, and if the majority is to rule in a republic or under free government, the big corporations called municipalities should have preference over the little corporations called companies.

In relation to the criticism of Parliament by the companies and their friends, it must not be forgotten that the companies had the field for a long time, and failed to make good. Till 1896 the cities could not introduce a bill to operate trams without the consent of the companies. If any company could be found to operate the system Parliament would not consider municipal operation.

own tram lines, but that they might purchase compulsorily, *at structural value,* the undertaking of a private company after the expiration of twenty-one years from the time the undertaking was authorized.[7] While providing for municipal ownership on easy terms, however, the law denied municipalities the right to work the trams, and left them to lease their own lines to private corporations, for operation under such conditions as the municipality might see fit to prescribe. The Glasgow Tramway Act got through with a clause authorizing the city to take the lines and operate them after a twenty years' lease; and from time to time concessions were granted to a few municipalities to work their lines under license, when "no reasonable" offer could be obtained from private parties.[8] But so decided was Parliament in the policy of preventing municipal operation that the interdiction of the act was supplemented by a Standing Order of the House of Commons precluding even the introduction of any bill for the purpose of giving local authorities power to operate tramways. This standing order was not revoked until the session of 1896.[9] Then the House unanimously passed a bill authorizing Sheffield to work its tramways. A few weeks later Dover and Hull obtained similar powers, and in the session of 1897, Liverpool, Manchester, Edinburgh, Newport, Neath, Birkenhead, Bolton, Halifax, Leicester and Southampton secured the same authority, including as in former cases, power to introduce mechanical traction. Since then it has been easy to obtain authority for municipal operation.

[7] The clause in the Act of 1870 which provides for compulsory purchase reads as follows:

"Upon terms of paying the then value (exclusive of any allowance for past or present profits of the undertaking, or any compensation for compulsory sale, or other consideration whatsoever) of the tramway, and all lands, buildings, works, materials and plant of the promoters suitable to be used by them for the purposes of their undertaking."

The local authority has only to pay "the then value" of the tramway; in other words, the structural value or cost of duplication, less depreciation. This interpretation of the clause was at first disputed by the tramway companies, but the first cases which came under it between the London County Council and the London Street Tramways Company, and between the Edinburgh Tramway Company and the Edinburgh Corporation (City) settled the matter, and the ruling was affirmed by the House of Lords (see London S. T. Co. vs. L. C. C., 1894, A. C. 489; 63 L. J. Q. B., 769). The London Street Company claimed £604,090 for about 4½ miles of lines with depots, etc., but the amount was cut down to £101,798, or about one-sixth of the sum claimed by the company.

[8] The Board of Trade report for 1894 stated that "By special statutory powers Blackpool, Huddersfield and Plymouth are working their tramways." Huddersfield obtained authority to work its tramways in 1882, but from that time until 1897 it was under orders from the Board of Trade to lease its lines as soon as a reasonable offer could be obtained from a private company. The grades were so steep that no company would undertake the service, but the city has made a decided success of it. Blackpool also was unable to find a company that would take the lease, and in Plymouth a company tried and failed, so that the city was forced to take the system or go without tramway service.

[9] After Glasgow and Leeds had begun to work their lines and other cities were demanding similar privileges.

A list of the principal cities and towns that have adopted municipal operation of street railways is given in Table 1. All but Birmingham and London, where the transfer is incomplete, have already fully municipalized and electrified their tramways, and are operating them as public electric systems.[10]

TABLE 1.—MUNICIPALITIES OPERATING ELECTRIC STREET RAILWAYS.

| *Municipalities.* | *Population, Census of 1901.* | *Estimated Population, 1906.* | *Municipalities.* | *Population, Census of 1901.* | *Estimated Population 1906.* |
|---|---|---|---|---|---|
| Aberdeen ..... | 143,722 | 171,022 | Leeds ..... | 428,953 | 463,495 |
| Ayr ..... | 31,541 | ..... | Leicester ..... | 211,574 | 232,111 |
| Belfast ..... | 349,180 | ..... | Liverpool ..... | 684,947 | 739,180 |
| Birkenhead ..... | 110,926 | 117,292 | London .....4,536,063 | | ..... |
| Birmingham .... | 522,182 | 548,022 | Lowestoft ..... | 29,842 | ..... |
| Blackburn ..... | 127,527 | 134,015 | Maidstone ..... | 33,516 | ..... |
| Blackpool ..... | 47,346 | ..... | Manchester ..... | 543,969 | 637,126 |
| Bolton ..... | 168,205 | 180,502 | Nelson ..... | 32,816 | ..... |
| Bournemouth ... | 47,003 | 67,702 | Newcastle-on-T. .. | 214,803 | 268,721 |
| Bradford ..... | 279,809 | 288,544 | Newport ..... | 67,290 | 74,227 |
| Brighton ..... | 123,478 | 128,095 | Northampton ..... | 87,021 | 93,749 |
| Burnley ..... | 97,044 | 102,808 | Nottingham ..... | 239,753 | 254,563 |
| Burton-on-T. ... | 50,386 | 52,922 | Oldham ..... | 137,238 | 140,969 |
| Bury ..... | 58,028 | 58,744 | Plymouth ..... | 107,529 | 118,014 |
| Cardiff ..... | 164,420 | 183,383 | Pontypridd ..... | 32,319 | ..... |
| Chester ..... | 38,281 | ..... | Portsmouth ..... | 189,160 | 205,118 |
| Chesterfield .... | 27,185 | ..... | Preston ..... | 112,982 | 116,399 |
| Colchester ..... | 38,351 | ..... | Reading ..... | 72,214 | 78,987 |
| Darlington ..... | 44,496 | ..... | Roachdale ..... | 83,112 | 87,189 |
| Darwen ..... | 38,211 | ..... | Rotherham ..... | 54,348 | ..... |
| Derby ..... | 105,785 | 122,981 | Salford ..... | 220,956 | 234,077 |
| Doncaster ..... | 28,924 | ..... | Sheffield ..... | 380,717 | 447,951 |
| Dover ..... | 41,782 | ..... | Southampton ..... | 104,911 | 117,312 |
| Dundee ..... | 160,871 | 165,007 | Southend-on-Sea .. | 28,857 | ..... |
| East Ham..... | 95,989 | ..... | Southport ..... | 48,087 | ..... |
| Exeter ..... | 46,940 | ..... | Stalybridge, etc.... | 47,538 | ..... |
| Farnworth ..... | 25,927 | ..... | Stockport ..... | 78,871 | 99,646 |
| Glasgow ..... | 735,906 | 835,625 | Swindon ..... | 44,996 | ..... |
| Gloucester ..... | 47,943 | ..... | Sunderland ..... | 146,567 | 154,385 |
| Halifax ..... | 104,933 | 109,272 | Wallasey ..... | 53,580 | ..... |
| Huddersfield ... | 95,008 | 94,851 | Walsall ..... | 86,440 | 94,577 |
| Hull ..... | 240,618 | ..... | Warrington ..... | 64,241 | 69,280 |
| Ilford ..... | 41,240 | ..... | West Ham..... | 267,308 | 301,617 |
| Ipswich ..... | 66,622 | 71,809 | Wigan ..... | 60,770 | 87,588 |
| Kilmarock ..... | 34,161 | ..... | Wolverhampton ... | 94,179 | 100,729 |
| Kirkaldy ..... | 22,346 | ..... | Yarmouth ..... | 51,316 | 52,613 |
| Lancaster ..... | 40,329 | ..... | | | |
| | | | Total.....14,121,458 | | |

The aggregate population of these 73 cities and towns is 14,121,458, or nearly 70 per cent. of the total population in places of 20,000 or more inhabitants in the United Kingdom; and the other 50 municipalities operating tramways include a considerable part of the remaining urban population. The movement appears to be all one way; no city or town that has entered upon municipal operation has gone back to private operation.

[10] See Vol. I., p. 261, note 2.

The chief reasons for municipalization were the desire for better service and fairer treatment of labor, and the belief that the streets and all monopoly uses of them should be controlled by the public and that the profits of such uses should accrue to the public.[11]

The companies as a rule gave the people very poor service and showed a grievous lack of enterprise. When the cities urged the claims of electric traction or demanded the extension of the lines into suburban districts to carry people out of the congested areas, the companies said there was no money in it and they could not agree to it unless they should be given longer terms than the standard twenty-one year lease or franchise. The cities replied in substance that public sentiment and the law had come to regard long terms as against public policy, and if the companies could not make reasonable improvements on a twenty-one year lease or franchise, with purchase at full value at the end, it was equivalent to saying that they could not be reasonably progressive under the conditions that had been found essential to the safeguarding of the public welfare. The fact is strongly emphasized in Great Britain that one of the great advantages of municipal ownership is that a public plant can be safely trusted with an unlimited franchise, while a company cannot. That is one of the handicaps of private ownership.

While the Commission was in London a visit was paid to Sir Clifton Robinson, the Managing Director of the London United Tramways Company, the largest and most important private tramway in the Kingdom. In the course of our conversation our chairman, M. E. Ingalls, asked the tramway magnate this question: "Why was it the companies did not develop electric traction and give the people a thoroughly good service in every way? We understand that the service under the old companies was very bad; why was it?"

Sir Clifton replied: "It was ignorance more than anything else; they put in some nephew or relative or friend of an owner to be manager or director—men who knew nothing of transportation. They paid all their profits in dividends, kept nothing for renewals or reserve, did not think ahead or foresee that the cities might take over the plant; and then when it came near to the end of the twenty-one year terms and there was a prospect that the cities would buy, the companies did not pay any dividends at all in many cases, so that when the term was up almost the whole community was down

[11] There were other reasons for municipal operation of tramways. In some cases, as we have seen, no private company could be found to undertake the service. In other cases private enterprise failed, and the people had to take the lines or walk. In Liverpool the company tried to prevent the extension of the city's boundaries, and the development of the suburbs, doing its best to hold up the progress of the city till its demands should be acceded to. Still other reasons are on record, but those named here and in the text are sufficient to give an idea of the motives and difficulties involved, and some of the phases of unpublic and anti-public activity and neglect in which the opposition of interests between the companies and the public manifested itself. (See Vol. I., p. 262.)

on the companies, and all that the cities had to do was to shake the tree and the rotten fruit fell into their mouths."

This may not be a very elegant bit of imagery, but it is certainly very expressive of the inefficiency and bad management of the British tramway companies.

The companies not only opposed extensions and persisted in continuing their antiquated horse systems, blockading the adoption of electric traction unless the cities would grant them terms the public deemed unreasonable, but in addition to this, their service was bad in other ways. The cars were small, dirty, ill-ventilated, uncomfortable, and unsightly. They were plastered with advertisements, outside and in, even the windows being largely covered in many cases. Such ads as Cadbury's Cocoa, Lipton's Teas, Swan Soap, Taddy's Tobacco, Hennesy's Brandy, etc., obtruded themselves on the public from the walls or windows of the cars or appeared in large letters a foot or more in height extending the whole length of the car on a headboard or sideboard that could be read blocks away, while the destination of the car was buried in obscure announcements that needed a telescope for their discovery. Moreover, the cars were few and the service infrequent, so that it often took less time to walk than to stand on a corner and wait for a street car. And to cap the climax, in spite of the poor service they rendered, the companies in many cases charged the public fares considerably above what were regarded as reasonable by the municipalities concerned.

When asked to reduce their fares the companies took the same stand they did in respect to extensions and improvements. They said they could not afford it. The fares demanded by the public they declared would mean bankruptcy.

But the municipalities have proved that the companies were wrong in both positions. The cities took the lines, carefully investigated the problem of improving transportation, adopted electric traction and sent the old horse-car systems to the scrap pile, extended the lines, put on larger, better, cleaner cars, with the ads reduced to due subordination, and in some cities abolished entirely, lowered the fares even more than they had asked the companies to do, shortened the hours of labor, and in many cases increased wages also, and, after all, realized, not the losses the companies predicted, but comfortable profits for the people. In other words the cities have done successfully what the companies declared they could not do.

In Table 2, the increase of mileage is tabulated for the periods before and after municipalization in five cities, and for corresponding early and later periods in five other cities having company management in both periods. In every case the rate of extension or increase of mileage under municipal ownership greatly exceeds the rate of extension under company management in the same city, the annual per cent. of increase of mileage under municipal operation ranging from 5 to more than 50 times the annual rate of increase under company management. The rate of increase under

municipal management also largely exceeds the rate for existing companies both in the earlier and later periods. The average rate of extension for the municipal systems is 15.8% per year against 5.5% per year for the existing companies in the later period corresponding with the period of municipalization in the upper group. Moreover, Edinburgh and Belfast, which now show the highest rate of extension among the companies, have both felt the impulse of municipalization; Edinburgh having bought the lines in December, 1893, and leased them with agreements for extensions and improvements; and Belfast having begun to municipalize several years ago, completing the process at the beginning of 1905. The facts set forth in this table clearly show that municipal ownership has had much more to do with extensions than electric traction, for the existing companies have adopted electric traction as well as the municipalities, and yet the rate of extension averages only about one-third of the rate for the municipal systems.

TABLE 2.—EXTENSION OF LINE BEFORE AND AFTER MUNICIPALIZATION.

| *City. | Period Before Municipalis'on | | | *Date of Municipalization. | Period Since Municipalis'on | | | Per Cent. of Increase for Period | | Annual Average Per Cent. Increase | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. of Yrs. | Miles of Line Increased From. | To. | | Miles of Line Increased From. | To. | No. of Yrs. | Before. | After. | Company Period. | City Period. |
| Glasgow .. | [1]12 | 22.2 | 30 | '94 | 30 | 80.5 | 12 | 35 | 168 | 2.7 | 14 |
| Leeds ..... | 12 | 13.7 | 14.2 | '94 | [2]18 | 54.2 | 12 | 3.7 | 201 | .3 | 16.8 |
| Liverpool .. | 9 | 41 | 43.7 | '97 | 43.7 | 63.4 | 9 | 6.7 | 45 | .7 | 5 |
| Sheffield .. | 10 | 9.4 | 9.4 | '96 | 9.4 | 35.5 | 10 | .... | 275 | .... | 27.5 |
| Manchester | 4 | 80.5 | 87.5 | '01 | [3]55.7 | 87 | 4 | 8.7 | 56 | 2.2 | 14 |
| Municipalities—Group averages..... | | | | | | | | | | 1.2 | 15.8 |
| | | | | Dividing Date. | | | | | | Earlier Period. | Later Period |
| Dublin .... | 12 | 31.3 | 33.3 | '94 | 33.3 | 49.5 | 12 | 6 | 48 | .5 | 4 |
| Edinburgh | 12 | 13.3 | 18.4 | '94 | [4]11.7 | 22.7 | 12 | 38 | 94 | 3.1 | 7.8 |
| Belfast ... | 10 | 15.1 | 23 | '96 | 23 | 39.1 | 10 | 52 | 70 | 5.2 | 7 |
| Bristol ... | 9 | 11.2 | 19.6 | '97 | 19.6 | 28.2 | 9 | 75 | 44 | 8.3 | 4.8 |
| Norwich ... | .. | .... | .... | [5]'01 | 13.8 | 14.5 | 5 | .... | 6 | .... | 12 |
| Companies—Group averages..... | | | | | | | | | | 4.0 | 5.5 |

*The first five cities, Glasgow, Leeds, Liverpool, Sheffield and Manchester, changed from private to public operation at dates ranging from 1894 to 1901, and the rate of extension in the period of company management is compared with the rate under public management. The last five cities, Dublin, Edinburgh, Belfast, Bristol and Norwich, have had company operation during both the earlier and later periods, except that the last two or three years in Belfast the city has been taking over the lines, completing the process Dec. 31, 1904. The London United Tramways Company was not organized till 1901, and made no returns for 1902. Moreover, the data available do not enable us to distinguish between extensions and the increase of mileage by consolidations of companies, so the company has not been included in this table.

The municipal period in each case is from the date of municipalization to the returns for 1906.

[1] For the periods going back twelve years from 1894, the figures for 1881 were taken, because the Board of Trade returns for 1882 are

In Table 3 we have tabulated the reduction of average fares under company control and under city management for the same period of years before and after municipalization in each case as shown in Table 2,[12] and also for the earlier and later periods of existing companies. Except in the case of Leeds, the rate of reduction of average fares is 6 to 160 times as great for the municipal period as for the company period, and 50 times as great for the municipal systems as a group compared with the net average reduction for the existing companies as a group, or 3½ times as great if we leave out the companies whose average fares have increased slightly instead of diminishing, in which case the average reduction in the later period for the four remaining companies would be .88 of one per cent. The Dublin United shows specially strong reductions for company management, partly because it started with such a very high average fare, and partly because the management is reasonable and progressive. The average fare, however, is still 2.48 cents against 1.88 cents in Glasgow, and Glasgow gives an average of over 50 per cent. more distance than the Dublin company for each cent of fare collected.

This brings us to the fact that the table does not show the whole amount of reduction in charges, because it does not cover the changes in routes. Prior to the municipal ownership period the companies did not as a rule get beyond 1d. a mile as the basis of their schedules. But the municipalities have increased the average distance for 1d. to 2, 2.3, 2.4 miles or more,[13] and existing companies, following the lead of the municipalities, have increased the average penny route to 1.5 miles, and in one line of the London

missing in all the half dozen sets to which we have had access. Taking the figures of the year before, however, favors the companies, for it gives them one more year for development, and with the twelve-year divisor magnifies their progress a little in the early period.

[3] The city already had 3.8 miles when it took over the company lines.

[3] A four-year period has to be used for Manchester in this table, because the city did not take over all the track the company had been operating, and the first returns for city operation are dated 1902 for 1901-1902. In 1901 the Manchester Carriage and Tramway Company was operating 87.5 miles—35.3 miles of line belonging to the city of Manchester, 29.1 miles of its own and 23.1 miles belonging to five other municipalities, including Salford and Oldham. The returns for 1901-1902 show the city of Manchester working 55.7 miles, Salford and Oldham deciding to work their own lines about the same time as Manchester, so Manchester, starting with a smaller mileage than the company ended with, began to build up a new system. All the municipalities greatly enlarged their systems. The Manchester growth is shown in the table. The Salford system grew from 12.3 miles in 1901, the last company returns, to 18.52 miles in 1902, the first city returns, and 36.8 miles in 1906. And the Oldham system developed from 11.3 miles in 1901, to 23 miles in 1906.

[4] In December, 1893, Edinburgh bought 11.7 miles of the 18.4 operated by the Edinburgh Street Tramways Company, and leased them.

[5] The first returns for the Norwich Company are dated 1901. It did not open its lines till 1900.

[12] Except in the case of Manchester where the whole 5-year period since municipalization is available for this comparison.

[13] For Sheffield it is stated at 2.5 miles for 1d.

United to 2 miles. The average charge per mile is below ½d. for the municipalities, against 1d. for the former companies, and ¾d. for the present companies in Dublin and Bristol, according to their own statements. For Norwich, the charge appears to be more than ¾d. per mile, and for the London United, less, apparently about .6d., but we have no exact data on this point for either of the last named companies. Taking the increase of distance given for 1d. into account, and the establishment of ½d. fares in all the municipal systems but that of Liverpool, the real reduction of charges under municipal ownership in the cities of Table 3 ranges from 50 to 66 per cent.[14]

TABLE 3.—REDUCTION OF AVERAGE FARES BEFORE AND AFTER MUNICIPALIZATION.

| *City. | No. of Yrs. | Company Period Average Fare Fell From Cents. | To | Municipal Period Average Fare Fell [1] From | To 1906 | No. of Yrs. | Per Cent. Reduction for Period. Before. | After. | Annual Average Per Cent. Reduction. Before. | After |
|---|---|---|---|---|---|---|---|---|---|---|
| Glasgow | 12 | 2.33 | 2.30 | 1.88 | | 12 | 1.28 | 18.3 | .11 | 1.52 |
| Leeds | 12 | 3.00 | 2.52 | 2.12 | | 12 | 16.0 | 15.8 | 1.33 | 1.31 |
| Liverpool | 9 | 3.96 | 3.78 | 2.22 | | 9 | 4.57 | 41.0 | .5 | 4.55 |
| Manchester | 5 | 4.04 | 4.03 | 2.38 | | 5 | .24 | 40.9 | .05 | 8.18 |
| Sheffield | 10 | 3.02 | 2.95 | 1.80 | | 10 | 2.31 | 39.0 | .23 | 3.90 |
| Municipalities—Group averages | | | | | | | | | .50 | 3.21 |
| | | | | | | | | | Early Period. | Later Period. |
| Dublin United | 12 | 4.88 | 3.28 | 2.48 | | 12 | 32.8 | 24.3 | 2.73 | 2.02 |
| Edinburgh | 12 | 3.62 | 3.16[2] | 2.34 | 2.28 | 12 | 12.7 | 2.56 | 1.06 | .21 |
| Bristol | 10 | 3.39 | 2.41 | 2.29 | | 10 | 28.9 | 4.97 | 2.89 | .49 |
| Belfast | 10 | 3.51 | 2.30 | 2.14 | | 10 | 34.4 | 6.91 | 3.44 | .69 |
| London United | .. | .... | [3]2.76 | 2.88 | | 3 | .... | 4.34 | .... | [5]1.45 |
| Norwich | .. | .... | [4]2.19 | 2.25 | | 5 | .... | [5]2.74 | .... | [5].55 |
| Companies—Group averages | | | | | | | | | 2.46 | .61 Net |

*See Table 2 for statement as to the groups of cities, periods, etc.

[1] For the turning point dates see Table 2, or estimate back from the 1906 column, according to the number of years in the periods covered.

[2] There was a break here, the city buying part of the lines of the old company (see notes to Table 2).

[3] From the returns of the year 1903. The present company began in 1901, but made no returns in 1902.

[4] Returns dated 1901.

[5] Increase, instead of reduction. In the case of Norwich this may be due to transfer passengers buying two routes at a time. In the case of the London United it is probably due to the fact that, as the system became more complete, passengers rode longer distances.

[14] See Vol. I., p. 267, note 6.

The savings to the traveler from the lowering of fares was very considerable. These savings were estimated for Glasgow by the tramway committee in 1897 at £180,000, or in round American figures, $900,000 a year. The Liverpool department estimated the savings in that city for 1904-1905 at £330,000, or about £1,600,000 a year. The establishment of one cent fares by the London County Council was estimated in 1905 as amounting to a clear gift of £100,000 (or nearly $500,000) a year to the passengers.

The answers given by the Commission's experts to two questions in Schedule IV. claim attention here.

The first question relates to the fares just before and just after the change from private to public ownership. The data for Glasgow show that the municipal management introduced at once the ½d. fare for short rides, the lowest fare under the company regime having been 1d. The distances given for various fares were lengthened somewhat and the schedule says:

Average fare per mile, company..... .89d.
Average fare per mile, city..... .46d.

This is a reduction of nearly 50 per cent., which is more than the management claims as the immediate effect of the transfer. The signed statement given the writer by Manager Dalrymple, shows the average fare per mile for the company, .89d., and for the city in the first year after the transfer, while the cars were still drawn by horses, .75d. Later, the city so greatly lengthened the routes that the average fare per mile fell to .45d., but not the first year. In the official report for 1896-7, p. 7, it is stated that if the 99,000,000 passengers carried that year (in horse cars) had paid the fares charged by the company, it would have cost them £180,000 more than the £365,761 it did cost them. That means a reduction of about 33 per cent. in the second year of municipal operation. Since then further reductions have been made, so that the total reduction now amounts to more than 50 per cent.

In Manchester the company ceased operating cars March 31, 1903, and the city made "a general reorganization of the fares and stages in October, 1903." The schedule then gives the following table showing the introduction of ½d. fares by the city, and ½d. stages between the 1d. and 2d. stages, the 2d. and 3d., and the 3d. and 4d. stages. The average fare for the company was 2d. (4 cents) and for the city, 1.2d. (2.4 cents); and the average distance for 1d. was 1 mile 100 yards for the company, and 2 miles 206 yards for the municipal system.

TABLE 3A.—MANCHESTER FARES AND DISTANCES BEFORE AND AFTER MUNICIPALIZATION, 1903.

| *Company. Distance in Miles.* | | *Fares.* | *Municipality. Distance in Miles. Inside or Outside.* |
|---|---|---|---|
| *Inside.* | *Outside.* | | |
| .... | .... | ½d. | .72 |
| 1.08 | 1.21 | 1 d. | 2.10 |
| .... | .... | 1½d. | 2.61 |
| 2.06 | 2.23 | 2 d. | 3.34 |
| .... | .... | 2½d. | 4.03 |
| 3.08 | 3.08 | 3 d. | 4.68 |
| .... | .... | 3½d. | 5.43 |
| 4.30 | 6.06 | 4 d. | 6.45 |
| 5.38 | .... | 5 d. | .... |
| 6.29 | .... | 6 d. | .... |

Liverpool took the tramways in 1897. Schedule IV. says: "The reduction between 1897 and 1899 would be between one-half and two-thirds of the original fares." The London County Council

introduced a system of ½d. fares,* and "many alterations have been made both in fares and distances since January 1, 1899, when the lines were taken over."

The second question of Schedule IV., above referred to, is this: "If fares were altered between January 1, 1900, and 1906, give changes."

The reductions by Manchester in 1903, amounting to more than 50 per cent., have been noted under the previous question.

For Glasgow, Table 3B gives the average distances at various fares in 1900 and 1902, and for the former company.

TABLE 3B.—GLASGOW FARES BEFORE AND AFTER MUNICIPALIZATION.

| | *Average Distances in Miles.* | | |
|---|---|---|---|
| | *City Management* | | *Company.* |
| | *1900.* | *1902.* | *1894.* |
| ½d. | .58 | .58 | No such fare |
| 1 d. | 1.75 | 2.30 | 1.12 |
| 1½d. | 2.31 | 3.48 | 1.80 |
| 2 d. | 3.49 | 4.59 | 2.20 |
| 2½d. | 4.12 | 5.88 | .... |
| 3 d. | 5.20 | 6.90 | 3.23 |
| 3½d. | .... | 8.11 | .... |
| 4 d. | .... | 9.19 | .... |
| 4½d. | .... | 10.15 | .... |
| 5 d. | .... | 10.77 | .... |
| 5½d. | .... | 11.59 | .... |
| 6 d. | .... | 12.93 | .... |

The company's longest route was 3.23 miles, and the fare 3d. The city extended the routes so that by 1902 the longest route had grown to a length of 12.93 miles, or four times the company's longest route; and instead of charging nearly 2 cents a mile as the company did, the city made a rate of less than 1 cent a mile, or more than 50 per cent. reduction.

In regard to the companies, Schedule IV. says: "London United. Slight increases in distance carried; fares were not materially altered. Dublin, Norwich. No changes." According to the Bristol company's returns, the average fare was 1.9d. in 1900 and 1.14d. in 1906.

The reduction of fares, increase of facilities, greater frequency and attractiveness of cars and general improvement of service established by the municipal managements, resulted in a great development of traffic. Table 4 shows the passenger traffic in millions for the municipal period and the company period (see Table 2 for dates, etc.). The annual rate of increase for the municipal period is 5 to 34 times as great as for the company period. The lowest rate of growth for the municipal systems is above the highest rate of growth for the existing companies; and the highest municipal rate of development is over five times the highest company rate in

* The company had a few ½d. fares, but no such general system as the County Council adopted. The Council also greatly lengthened the routes in many cases and made a very marked improvement in the service for workingmen.

the later period. The traffic of existing companies has not increased so rapidly in the later period as in the early period. The average rate of traffic increase for the municipal systems is 16 times the average for the companies they replaced, and 4.8 times the net average for existing companies during the period covered by municipalization.

TABLE 4.—TRAFFIC BEFORE AND AFTER MUNICIPALIZATION.

| City. | Company Period No. of Yrs. | Company Period No. Passengers (in millions) Rose From. | Company Period To. | Municipal Period No. Passengers (in millions) From. | Municipal Period To. 1906 | Municipal Period No. of Yrs. | Per Cent. Increase for Period. Before. | Per Cent. Increase for Period. After. | Annual Average Per Cent. Increase. Before. | Annual Average Per Cent. Increase. After. |
|---|---|---|---|---|---|---|---|---|---|---|
| Glasgow .... | 12 | 34.15 | 53.73 | 208.06 | | 12 | 57 | 287 | 4.8 | 23.9 |
| Leeds ..... | 12 | 5.96 | 8.45 | 69.63 | | 12 | 42 | 724 | 3.5 | 60.3 |
| Liverpool ... | 9 | 22.77 | 29.69 | 119.12 | | 9 | 30 | 301 | 3.3 | 33.4 |
| Manchestr .. | 4 | 54.95 | 63.5 [1]23.59 | 133.92 | | 4 | 16 | 467 | 4 | 117 |
| Sheffield .... | 10 | 5.19 | 6.57 | 68.24 | | 10 | 27 | 937 | 2.7 | 93.7 |
| Municipalities—Group averages ..... | | | | | | | | | 3.6 | 57.3 |
| | | | | | | | | | Early Period. | Later Period. |
| Dublin U.... | 12 | 10.04 | 19.20 | 50.40 | | 12 | 91 | 163 | 7.6 | 13.6 |
| Edinburgh .. | 11 | 8.37 | 15.42[2]16.56 | 53.67 | | 11 | 84 | 224 | 7.7 | 20.3 |
| Bristol ..... | 10 | 5.69 | 18.59 | 45.29 | | 10 | 227 | 144 | 22.7 | 14.4 |
| Belfast ..... | 10 | 6.17 | 22.12 | 30.13 | | 10 | 258 | 36 | 25.8 | 3.6 |
| London U... | .. | ..... | [3]36.21 | 49.16 | | 3 | ... | 36 | .... | 12.0 |
| Norwich .... | .. | ..... | [4]7.82 | 7.33 | | 5 | ... | [5].6 | .... | [5]1.2 |
| Companies—Group averages..... | | | | | | | | | 15.3 | 11.9 Net |

In some of the cities the tramways carry express packages and mail. A resident of the city or the surrounding country reached by the tramways can mail a letter or express a package on the tram car that goes by his door or travels the neighboring roadway.

Next to the desire to obtain a better service at lower fares, to secure electric traction on reasonable terms, with due extension of lines, larger, cleaner, better looking cars, and other needed improvements, and to take a direct control that would prevent in future any such paralysis of progress and blockade of the people's will as had occurred under the leasing system—next to this, the wish to improve the conditions of labor has been the predominant motive in the municipalization of tramways, especially in the larger cities.

*See Table 2 for dates of municipalization, periods, etc.

[1] Here again the Manchester period is four years, for the reasons stated in note 3 to Table 2.

[2] There is a break in Edinburgh, owing to the fact that in December, 1893, the city purchased part of the lines and leased them, so that, in order to get full unbroken years for both periods, old and new, it was necessary to take the data for 1893 as ending the first period, and those for 1894-1895 for the beginning of the new period.

[3] Returns of 1903 (see notes to Table 3).

[4] Returns of 1901.

[5] Decrease. The passenger receipts fell off as well as the number of passengers, so that the difference here cannot be accounted for by the double ticket transfer system.

The companies generally paid the men low wages and worked them very long hours, 11 and 12 hours a day for 7 days in the week being moderate requirements according to the ideas of company managements before municipal operation lifted the standards of employment and educated public sentiment, and company sentiment also, to a point where reasonable treatment of labor becomes the normal policy. Under the company regime it was not unusual for the men to work 13 to 14 hours a day, and even longer hours than this were demanded by some companies.

When the municipalities took the tramways they greatly lessened the hours of labor and increased wages in many cases at the same time. They adopted as a rule a 9, 9½ or 10 hour day, with one day's rest in seven, reducing the hours from 77, 84, 91 or 100 and more per week under company management to 54 and 60 per week under public management. In Glasgow, for example, the company worked the men 77 to 84 hours and more per week. The city adopted a 10-hour day and a little later a 9-hour day with six days' work a week, reducing the hours from 77 and 84 to 60, and then to 54 per week.[15]

The Sheffield management states that the city reduced the hours from 102 to 60 per week, and more than doubled the hourly wages of experienced drivers and conductors.[16] Liverpool claims a reduction of average hours from 98 and 105, under company rule, to 60 under public management, with an increase of something like 50 per cent. in wages.[17]

Manchester cut the hours from 70 to 54 per week when she municipalized the tramways, and also increased wages 43 to 63 per cent. Manager Baker of the Birmingham City Tramway states that the city established a 60-hour week in place of what was ostensibly a 70-hour week under company control, but was very often in reality a 90 to 100-hour week, or even more.[18]

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[15] Statement of Mr. John Young, the first manager of the Glasgow tramways. Wages were increased 15 to 25 per cent. at the same time, and the hours and pay of men in the service three years or more was raised 65 per cent. above the company level.

Men frequently worked 13 to 14 hours a day under company control, but 84 hours was nominally a full week's work.

[16] The maximum wages of drivers or motormen were increased from 3.3d. to 6¾d. per hour; 71 per cent. of the motormen are getting the maximum wages; 16 per cent. are getting 7.7d. and 8d. per hour, including "gradient money." The maximum wages of conductors rose from 2d. to 5.9d. per hour, and relief pay; and 27 per cent. of the conductors receive the maximum pay. Conductors are promoted to motormen. The city also grants the men one week's holiday per year with pay, also free uniforms, and allows them to ride free of charge to and from duty.

[17] Manager Mallins says the company worked employees 13 to 17 hours a day, with a probable average of 98 to 105 per week for the different classes of labor.

[18] The company pretended to have a 10-hour day, but the men said that they were on duty 14 hours in the 24 generally, frequently 15 or 16 hours, and sometimes even 18 hours, without intervals for meals. And they complained bitterly that when on duty on the late night

In London the companies as a rule worked their conductors and drivers, pointsmen and inspectors from 77 to 91 hours a week. The London County Council made a 60-hour week when it took the operation of the tramways. Dr. F. C. Howe, writing for the United States Department of Commerce and Labor, estimates that the reduction in hours of tramway employees during the period of rapid municipalization and electrification, amounted to 48 per cent., and the increase of wages at the same time he puts at 42 per cent.[19] We have not sufficient data before us to make so broad a generalization, but it is certain that in some cases the company schedule of hours was nearly 100 per cent. above the working week established under municipal management, and that the wages per hour have been lifted 60 to 100 per cent., and even more in some of the best systems, for men who have been long enough in the service to prove their value.

The table given in Vol. I., p. 268, presents in condensed form some of the facts relating to the reduction of hours under municipal operation.

The tramway acts require the managements to run workmen's cars morning and evening at half the penny a mile maximum allowed by law for ordinary fares. In Glasgow and Dublin for example, the law provides for workmen's cars before 7 a. m., and after 6 p. m., at fares not exceeding ½d. a mile. Glasgow has abolished the class fares by reducing all fares below the ½d. a mile prescribed by the law for workmen's fares.[20] Liverpool also makes law rates for all, with no distinction of working-class cars.[21] In Manchester all the cars are workmen's cars before 7 a. m., and 2 cents will carry them $3^1/_3$ miles, 3 cents over 4 miles, and 4 cents $5^1/_3$ miles. Any one can ride at these fares who rides early.

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shift, they would often be called for the early morning shift at 4 a. m. and have to go to work again for another long day on only 3 hours sleep.

As to wages, the company's conductors start with 4d. an hour of nominal time, and end with 5d.; the city's conductors start with 5d. an hour and rise to 6d. The city's motormen start with 6d. an hour for the first year, get 6.3d. the second year and 6.6d. the third year. The company's motormen get 5d., 5½d. and 6d. for the corresponding periods.

[19] U. S. Bulletin of Labor, January, 1906, p. 67.

[20] The Glasgow management says they found it a nuisance to have special rates for different classes of service and so they cut all rates to the level of the working class rate, and now the fares are considerably lower than the legal requirements for workingmen's fares.

[21] In Sheffield, Leeds, Nottingham and a number of other municipal systems the same cars are used for all classes of passengers. Sheffield, like Liverpool and Glasgow, has reduced all fares below the ½d. mile level so that passengers ride at any time of the day and in any car at fares below the workers' rate prescribed by law. In Leeds all cars run at workers' rates up to 7:45 a. m., and the upper decks of all cars are open to passengers at workmen's fares between 5 and 6:15 p. m. In Nottingham passengers on all cars leaving a terminus before 8:00 a. m. are carried at workmen's rates.

The situation in some of the other cities is shown in Table 5A, derived from the data of Schedule IV.

TABLE 5A.—WORKINGMEN'S SERVICE.

| | Average Fares on Workmen's Cars. | Distance for 2 cts. Miles. | Distance for 4 cts. Miles | Number of Workmen Carried. |
|---|---|---|---|---|
| London County Council... | 1.78 | 3 to 7 | 6 to 14 | 9,898,289 |
| London United..... | 2.98 | 5¼ | 11½ | 1,721,739 |
| Dublin United..... | 2.22 | 2½ | ..... | [1]11,397 |
| Norwich..... | No data. | | | |
| Bristol..... | No data. | | | |

The London County Council makes a universal 1d. (2 cent) fare for workmen for any distance on any route; and 2d. buys a two-journey ticket, "available for another journey on any route, on any car, at any time of the day of issue." Workmen, of course, like any other passenger, may ride the short stages for ½d. But there are twenty good routes, 3 to 7 miles long, any one of which the worker can ride for 1d., with a round trip up to 14 miles (7 in and 7 out) for 2d.[22]

The County Council obeys the spirit as well as the letter of the law, and makes ample provision for the working-class service. The companies do not. The Dublin United, for example, only operates one car on a route, and only five routes have even the solitary workmen's car. The car starts in at 6 a. m. and out at 6 p. m. Salesgirls cannot ride on these cars, so they must pay the full fare anyway,[23] and there is room for only a very small fraction of the workmen who travel by the trams. Aside from the question of room, the would-be passenger loses the car unless he is on hand at the exact time. In other words, the companies as a rule do not encourage the working-class traffic. They prefer to have the workers ride in the ordinary cars and pay higher fare, nearly double on many stages, for the company trams, except one line of the London United system, have not brought ordinary fares down to the working-class level. The London United has seven penny routes for London workmen, ranging from 3 to 8 miles (only one 8-mile route) and one 2d. route of 12½ miles.

[1] The figure given in the schedule is 51,159. But one of the principal officers of the road stated to us that the workmen's fares numbered less than 12,000 a year out of a total of more than 50,000,000 passengers, and in a letter dated June 11, 1906, he gives the exact number carried in workmen's cars as 11,397. Return tickets at 8d. each are issued for a 5d. stage, and about 100,000 of these tickets are issued in a year. Even this only gives low fares to one-fifth of one per cent. of the passengers, and only in respect to two stages out of a total of eighty.

[22] London route book, 1906, pp. 93-105.

[23] On one line (the longest run in Dublin, 9¼ miles out) the payment of the ordinary fare is no great hardship for the company is competing with the railroads on this line, and that has brought the fare down to 5d. (10 cents), or within ½d. of the workmen's fare on that line.

The Board of Trade returns for 1906 reveal the following contrasts:

TABLE 6.—TRAMWAY RETURNS FOR THE UNITED KINGDOM.

| | | | Percentages. | |
|---|---|---|---|---|
| | Local authorities. | Companies. | Local Authorities. | Companies. |
| Undertakings owned | 175 | 137 | 56 | 44 |
| Miles of line | 1,491 | 748 | 67 | 33 |
| Cost per mile of line | £24,916 | £28,072 | .. | .. |
| Miles of track | 2,499 | 1,009 | 71 | 29 |
| Cost per mile of track | £14,870 | £19,250 | .. | .. |
| Undertakings worked | 123 | 127 | 49 | 51 |
| Mileage | 1,276 | 963 | 57 | 43 |
| Capital outlay | £31,147,306 | £26,305,028 | .. | .. |
| Receipts | £6,853,486 | £3,789,692 | .. | .. |
| Operating expenses | £4,323,734 | £2,512,029 | .. | .. |
| Their per cent. of income | ..... | ..... | 63.08 | 66.28 |
| Net revenue | £2,529,752 | £1,277,663 | .. | .. |
| Per cent. of return on capital. | ..... | ..... | 8 | 4.8 |
| Net revenue per mile | £1,980 | £1,365 | .. | .. |
| Net revenue per car—mile | 7.82 cts. | 6.86 cts. | .. | .. |
| Car miles run | 154,965,781 | 89,183,683 | .. | .. |
| Passengers carried | 1,529,596,438 | 706,416,339 | 68 | 32 |
| Average fare per passenger | 2.1 cts. | 2.43 cts. | .. | .. |
| Operating cost per passenger | 1.3 cts. | 1.72 cts. | .. | .. |

The returns for 1906 show that out of 2,240 miles of lines in operation 1,993 miles were operated by electricity, 72 by steam, 26 by cable, 4 by gas and 145 by horse power and the rest by mixed methods.

About 30 municipal systems are still held by companies under lease, but the number is fast diminishing. The mileage thus leased was 215 in 1906, or about 14% of the total belonging to local authorities. Private tramway concerns decreased by 9 during the year, 7 of them passing into the hands of municipal managements. Municipal systems appearing for the first time under public control in 1906 are those of Pool, South Shields, Erith, Leyton, Littleborough and Walthamsstow.

It appears from the data above tabulated that the average fare per passenger is 14 per cent. more for the companies than for the public systems, and yet the companies have a higher percentage of operating cost to income. The average working cost per passenger is less than 1⅓ cents (1.3 cts.) for the public systems, and nearly 1¾ cents (1.72 cts.) for the companies, or 32 per cent. higher operating cost for the companies than for the municipalities. Their capital per mile is larger,[24] and their net revenue considerably less than for the public systems—the return on capital being 4.8 per cent. for the companies against 8 per cent. for the municipalities. With 57 per cent. of the mileage, the municipal systems ran nearly twice as many car miles as the companies, and carried more than twice as many passengers. Their profits are £1,980 per mile against £1,365 for the companies, and 7.82 cents per car mile against 6.86 cents

[24] The Board of Trade figures are not conclusive on this point, however, for the company capitalization includes some buildings and equipment for lines they lease from municipalities, and the returns do not state how much is due to this item.

for the companies. The municipalities realize a very large profit on an average 2-cent fare for the whole group of local authorities operating their tramways,[25] while the companies have a much higher cost and obtain a smaller profit in spite of an average fare of nearly 2½ cents.

The full publicity incident to public operation has been of great value to both public and private managements. Every item of cost and detail of management has been published and a wholesome rivalry has been created thereby.[26]

The development of municipal operation has impelled the remaining companies to improve their service and to give more consideration to the public, yet the cities continue to municipalize the tramways to get still lower fares, control the streets, secure the profits for the public and add a new field for the development of civic activity and good citizenship.[27]

Alderman Beal, of Birmingham, who has been four times Lord Mayor, the last time in 1905, and who is now chairman of the City Tramways Committee,[28] gave an excellent illustration of this

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[25] The great majority of municipal tramway systems makes a good surplus above interest and repayment charges, and many of them, as will appear in Section III., pay large sums into the public treasury in relief of rates or to lower the rate of taxation on all property. A few municipal systems do not realize a net profit. Some are located in places where private companies refused to operate or tried it and failed, and some others show insufficient profit to meet interest and capital charges because of low fares or small traffic or because they are too recent to have attained a full measure of success. Of the seventy odd cities and towns above listed, with their populations, 7 did not have sufficient net earnings to meet interest charges, and 10 more did not have profit enough to cover interest plus the repayment charges necessary for the cancellation of the debt within the required time. Nearly all these electric systems are very recent; 6 were opened in 1904-5, and 9 in 1902-3, leaving only 2 that started before 1902. The total amount which must be made up in order to cover the remaining interest and repayment charges after applying the net revenue of the tramway systems in question is £1,700 per city, or 8d. (16 cents) per capita for the population served by the tram lines under discussion. Municipalities pay for the maintenance of ordinary roads out of taxes, and these municipalities pay for the tramways in part out of taxes in order that the people may have electric transit at average fares of 2 or 3 cents.

[26] Manager Fearnley says: "One of the greatest points of municipal operation is the open books, and the steady competition with each other for results. We get everything that any one else in municipal business knows. This spread of exact inside knowledge is of very great value to the progress of both public and private systems."

[27] See Vol. I. pp. 270-2.

[28] Alderman Beal was for years one of the ablest and most persistent opponents of municipal operation, but is now an enthusiastic supporter of the policy. In several elections the question was made an issue in Birmingham, and the people returned municipal ownership councilmen. In 1899 the Council voted, 60 to 1, to operate the lines when the leases ran out. The arguments were: (1) The need for improved service, electric traction and extension of lines; (2) economy through consolidation of lines and co-ordination of services; (3) better treatment for labor; (4) profits for the people; (5) management in

principle. He said that as a director and stockholder of a private company he found himself looking chiefly at profit, and inclined to oppose increase of wages and acquiescence in the demands of the public, but in municipal work he found himself inclined to favor improved conditions of labor, and readily assent to the wishes of the public, not looking first at profits as he did in his relations with the private companies.

Municipal operation of tramways in Great Britain has been developed for the most part under fairly good political conditions. In the best cities, like Glasgow, the Council, which elects the Mayor and the committee on tramways and lighting, is chosen by the people on much the same principles as those on which the stockholders of a bank or railroad elect their board of directors; in other words, councilors are not elected on party lines as a rule, but because of their fitness to manage the business affairs of the city. Even in cities like Sheffield, Birmingham, Manchester and London, where members of Council are largely elected on national party lines, the councils when once elected very rarely act on party lines in the conduct of the city's business. They do not manage the tramways or other public utilities on the basis of party politics, but on the basis of what they regard as sound business in the interest of the whole community. Partisanship is practically eliminated from the administration of public business. Neither the Council nor the Tramway Committee asks what the tramway manager's politics are. No matter what changes take place in the political complexion of the Council, the tramway manager is safe and free to act according to his judgment in the employment and discharge of men, and all the executive duties of his position. If members of Council exert their influence to get places for their friends, as they sometimes do, the manager is perfectly safe in disregarding the recommendations. Such is the testimony of tramway managers and members of Council (some of whom have had their requests turned down), and other men who are in a position to know. The spoils system has no grip on municipal government in Great Britain, such as it has in our larger cities. There are instances of influence and favoritism in appointment and employment, but they

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harmony with the public interest. The committee which reported in favor of municipalization said: The companies' view the matter as it will affect their dividends rather than the convenience of the public." Manager Baker, when asked what mainly caused the adoption of municipal operation, said: "Well, the companies operate only for what they can get out of it; the city operates with regard to the public welfare and makes a lot of money out of it after all."

In 1902 the city had a big fight with the companies in Parliament. The companies got hold of outside lines by guaranteeing big rentals and then asked Parliament for compulsory powers to go through Birmingham, but the city won. In 1903 two companies asked for new leases, having concluded to transform their lines to electric traction if the city would give them 24-year terms. Alderman Beal moved to accept the offers, but his motion was voted down, 50 to 15.

are sporadic, the exception not the rule, and councils take a decided stand against it.[29]

Substantial business men of large experience and great weight in the community, enter the Councils and serve year after year on the tramway and other committees, without pay or expectation of financial gain to themselves. The success of municipal operation in Great Britain has been largely due to these political and civic conditions.

These conditions in their turn have been largely due to the development of municipal operation of public utilities. There has been a mutual interaction.

## II—SPECIAL ACCOUNT OF THE SYSTEMS SELECTED FOR SPECIAL INVESTIGATION IN WHICH A CHANGE HAS TAKEN PLACE FROM ONE FORM OF OWNERSHIP AND OPERATION TO THE OTHER.

The Commission selected for special investigation, four public systems—Glasgow, Manchester, Liverpool and the London County Council—and four private systems—London United, Dublin, Bristol and Norwich. The Bristol company refused to be investigated, so that the schedules cover only 7 plants.

The writer visited Bristol, went over the system, met the company's manager, and some of the leaders in the Council and in the business life of the city, and made a study of the company's reports and public documents, and interviews with the company's manager and some leading members of the city government, made it clear that both the face capitalization and the market capitalization of the system are greatly in excess of tangible assets. The face value of stocks and bonds is $6,500,000, and the market values amount to $7,500,000 (using round figures at $5 to the £), against real assets of less than $3,500,000, or an excess of market capitalization amounting to something like 114 per cent. of real value. In nine years the city will have a right to buy the plant at structural value, which is estimated now at $2,500,000. This makes the relation between physical assets and capitalization specially unsatis-

[29] Thus the Manchester Council passed an order that men applying *without* a note from a Councilman should have *preference* over those recommended by Councilmen. The tramway chairman in Birmingham said: "We have no trouble with politics or influence of Councilmen to get places for their friends. Councilmen do send men or speak for men needing work, but they use no pressure, and if they did it would amount to nothing. The committee stands by the manager in his entire control of the force on straight business principles." In one city the Commission visited we were told that when suspicion arose that certain Councilmen were getting relatives and friends appointed to positions on the tramways a leading Councilman moved for an investigation and the preparation of a list of all such members with the names of the relatives and friends they had recommended; sentence of imprisonment would hardly be worse than the publication of such a list by the press of an English city after an official investigation.

factory.[1] The London United also refused at first to permit an examination of its books and appraisal of its plant, perhaps for reasons similar to those just stated for Bristol, since $10,000,000, or nearly two-thirds of the London United's capitalization of $16,000,000, is excess above tangible assets. But the company finally gave its assent to the investigation, and every courtesy was extended to the Commission by the Managing Director, Sir Clifton Robinson, and other officials of the company.

All the municipalities and companies use the overhead trolley, except the London County Council. The overhead system being forbidden by law in its London territory, it has transformed and is transforming the horse railroads purchased from the companies, to the underground conduit system, a most expensive but very excellent system of construction. The schedules cover only the Southern system of the County Council's tramways, as it did not begin to operate the Northern system till April, 1906. The London United has only four miles of line in London. Most of its lines are in Middlesex and Surrey, so it can use the trolley. Norwich is a considerably smaller system than the others, but was taken to make up the list

[1] The company has 200 cars and 51½ miles of track on 28¼ miles of street for a population of 360,000 to 400,000. The capital is $6,500,000—one-fifth of it in bonds. The $2,500,000 of ordinary shares ($50 per) stand at about $75 on the market, so that they represent $1,250,000 premium, making a total of $7,500,000 of market values. The company will need at least $6,500,000 in order to make good its capital. Toward this it has only $642,600—all it has accumulated for reserves in 30 years—about $535,000 in renewal funds, stocks on hand and other quick assets, and the plant which does not appear to be worth over $2,500,000. That is the cost of duplication less depreciation, as shown by estimates secured by Councilmen considering the question of city purchase. An examination of the company's capital account indicates nearly the same value. In 1901, when the system was still all horse traction, the company had spent £834,392 on the horse lines and their equipment. The total capital expenditure given in the 1906 report is £1,324,061. Allowing 20% of the horse capital for land and buildings that did not have to be scrapped, we have a capital outlay of £656,550 for the present system. Uncovered depreciation for six years at 3½% a year would be £131,000, giving a present value of £525,500, or about $2,450,000. The term has nine years more to run, at the expiration of which the city has the right to take the plant at its structural value, i. e., cost of duplication less depreciation. On an electric system of this kind, 17 years old, the depreciation is likely to be considerable. It is estimated that the city will not have to pay over the present value, $2,500,000, at the most, and the Tram Manager and the city authorities agree that the municipality is practically certain to buy. Leaders in the Council say the city would be foolish not to purchase, for it can buy at about $2,500,000 a plant that is paying interest and dividends on three times that amount. If the plant were closed out now at the said structural value there would be a total of $3,677,600 of physical assets with which to meet $6,500,000 of face values and $7,500,000 of market values of stocks and bonds. At the present rate of accumulation about $500,000 would be added to the reserves in the next nine years; but that would not fill the gap. The only way to do that appears to be for the company to increase its business very greatly or cut down its dividends. For the year ending Dec. 31, 1905, the total tramway receipts were $1,080,000, and the receipts from busses and carriages were $195,000. The total dividends were $300,000.

because tramway companies owning and operating the lines in British cities of large size are getting very scarce. The Dublin and Bristol companies each have the whole tramway system of a large city and therefore resemble the municipal systems of Glasgow and Liverpool more closely than is the case with the other two companies.

The company systems have not undergone the change from one form of ownership to the other, which is necessary to bring out the historic contrasts with which this branch of the inquiry is concerned. The contrasts between existing systems are examined in the tramway sections of volume I. We are concerned here with the history of the selected public systems where a change in the form of ownership and operation has taken place.

### Glasgow.

Glasgow is the second city in the British Empire in respect to population, and the first in respect to public ownership. It is to public ownership very much what London is to finance. It is the metropolis of Scotland—a manufacturing city of about 835,000 population and an area of 12,382 acres—very compact,[1] very progressive, very full of Scotch common sense, co-operative spirit, civic honesty and public enterprise.

The city built the tramways and leased them for operation. The first line was constructed by the city in 1871 and leased for 23 years, from July 1st of that year. Subsequent lines were also built by the city and leased for such periods that all concessions would expire on the same date, July 1, 1894.

The leases required the company to pay interest and sinking fund to cancel the cost of construction by the end of the term; also 4 per cent. on construction cost for renewals; $750 per mile per year for the use of the streets; all expenses of paving and repairing the roadway between the rails and 18 inches beyond, etc.[2]

From a financial point of view the leases were fairly successful.[3] But from other points of view than the financial the leasing plan was not successful. The city desired to have the tramways

[1] The following table illustrates the density of British cities as compared with ours:

| | *Area in Acres.* | *Population 1906 Est.* | *Population per Acre.* | | *Area in Acres.* | *Population 1906 Est.* | *Population per Acre.* |
|---|---|---|---|---|---|---|---|
| Glasgow ... | 12,382 | 835,625 | 67 | St. Louis... | 39,276 | 649,320 | 16 |
| Edinburgh.. | 10,908 | 341,035 | 31 | Boston .... | 24,613 | 602,278 | 25 |
| Leeds ..... | 21,596 | 463,495 | 21 | Philadelphia | 81,828 | 1,441,735 | 17 |
| Birmingham | 12,639 | 548,022 | 43 | Cleveland ... | 25,378 | 460,327 | 18 |
| Bristol .... | 17,000 | 363,223 | 27 | Indianapolis | 19,165 | 219,154 | 14 |
| Manchester. | 19,893 | 637,126 | 32 | Washington. | 38,406 | 307,716 | 8 |
| Liverpool .. | 14,912 | 739,180 | 49 | Chicago ... | 114,932 | 2,041,185 | 17 |
| London .... | 74,880 | 4,536,541 | 60 | New York.. | 209,218 | 4,113,043 | 20 |
| | 184,210 | 8,464,257 | 45 | | 552,816 | 9,834,758 | 17 |

[2] See Schedule I.

[3] The promoting company which took the lease in 1871 sold out to the operating company for £315,000, clearing £150,000 or more, as the

keep pace with the growth of population, provide every section with adequate facilities, and extend the lines into suburban districts; the company wanted large profits, and did not favor extensions into less profitable districts. From the beginning the company opposed the extensions the city desired to make. We quote from a report issued in 1894 by the Glasgow Tramway and Omnibus Company: "The system of Glasgow tramways authorized in 1870 extended only to 21 miles, several of the routes stopping short of the city limits, and in 1872 the city proposed to extend these lines to its boundaries, and to add many miles beyond the city itself. In the same year three other separate schemes proposed to come from various places outside and join their lines to the city lines authorized by the act of 1870. The tramway company opposed at great expense the city and other bills. The city's bill itself sought extension of no less than 21 miles in length, in addition to those authorized by the act of 1870, but they were unsuccessful, and only the financial clauses of their bill were sanctioned."

In 1889, five years before the expiration of the leases, negotiations for renewal were begun, but the company and the city found it hard to agree on terms. In addition to the difficulty about extensions, the labor question and the question of mechanical traction became serious matters of dispute.

The tramway men were ill-clad, overworked, underpaid, and dissatisfied. They were working 11 and 12 hours a day, and not infrequently 13 or even 14 hours, and did not receive over $5 or $6 a week. A deposit of $10 was required to obtain employment. Fines were imposed for reaching their destination too early or too late, for standing too long or not long enough, and for other offenses.

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real investment did not exceed £165,000 (Schedule I). The operating company paid on its inflated capital half yearly dividends of 5% to 7% for 13 half years, or at the rate of 10% to 14% a year, and 10% to 12% for 10 half years or 20% to 24% a year. The largest dividends were in the eighties and the lowest in the early years, December, 1872, to December, 1875, being passed without any dividend at all. The company might have made even more than 16% to 24%, water and all, if it had not set itself so persistently against extensions and improvements. It had an uncomfortable end because it negelected to write off any depreciation till two or three years before the close of the lease, when it was known that it would not be renewed, and then it was too late to cover its capital. After its losing fight with the city it went into liquidation with a heavy handicap.

From the payments made to it by the company the city was able to pay for renewals, clear off most of the capital debt and pay some £69,600 to the "common good," an average of £3,000 per year during the lease. In 1894 £201,470 of the total capital expenditure (£344,965) had been cleared off, leaving £143,495 outstanding. The lines were regarded as more than covering remaining debt, although they had very greatly depreciated at the end of the lease, the rails having had an average of 9 years' wear, and the points and crossings generally being in very bad condition. On part of the system the company had not kept up ordinary repairs, as it should have done, and an arbitrator decided that the track was not in condition to fulfill the company's obligations, and fixed the portions to be repaired by the lessees. The company paid the city £18,400 to settle the claim and left the city to do the repairing itself.

Men were discharged for being too prominent at a meeting to consider striking because of their grievances. The city asked better treatment for the men. It specially demanded that the hours should be reduced from 77, 84 and 91 or more per week to 60 per week. The company finally agreed to adopt electric traction, but refused to adopt the policy demanded by the city in respect to labor.[4] It said that it was treating its men as well as other tramway companies treated their employees, and it could not afford to do any better. The city was determined to secure fair treatment for the men, and this, according to Mr. John Young, the first manager of the Glas-

[4] The city offered to continue the leasing system on the following conditions: "To provide that the conductors and drivers should not work more than 60 hours per week; to secure their being properly clothed and that they should have sanitary conveniences at suitable places; to reserve full power to the city to adapt the tramways to mechanical motors and also for constructing additional tramways; to restrict the use of advertisements on the cars; to provide that the city should be in a position to enforce performance of the obligations contained in the conditions." It was also proposed to lease for five years at a time instead of twenty-one years or more at a time, and to bind the company not to alter the scope of their business in such a way as to make it impossible for the city to know the facts as to cost, etc., relating to their own system.

In a letter dated Oct. 7, 1891, a copy of which is before the writer, the company offered to transform the lines gradually to mechanical traction, beginning as soon as it should be determined what motors should be used. The other conditions proposed by the city were ignored.

The Tramway Committee reported that the company's offer was limited to the introduction of mechanical motors, that "no reference was made to the conditions of let so lately agreed on by the Corporation (City Council) and placed before the company, and that the company had already extended the scope of its business, having entered on the working of other tramways and acquired a general hiring business, so that the separation of accounts and the distinguishing of the expenditure pertaining to the Glasgow tramways from the other business of the company would now be difficult if not impossible."

We quote from the minutes of the Glasgow Council, Oct. 27, 1891, page 377:

On the suggestion of the chairman, the committee, after consideration, resolved to recommend the Town Council to approve of the following resolutions, viz.:

1. "That, at the expiry of the lease now current between the Corporation and the Tramway Company, the whole existing tramway system, and the traffic thereon, shall be managed and controlled directly by the Corporation, and that it be remitted back to the committee to negotiate and, if deemed expedient, to make arrangements with the present lessees for the acquisition of their stables and plant, or such portions thereof as may be necessary for carrying on the working of the tramways on the expiry of the lease."

2.. "That the committee be instructed further to consider and report in what manner the tramway system can be best worked by mechanical motors, and also to make whatever arrangements may be necessary for testing, in a practical manner, during the currency of the present lease, any method of mechanical traction of which they may approve."

Bailie James Martin dissented.

Approved of by the Town Council on 12th November, 1891.

An amendment to continue negotiations with the company was lost, 49 to 7.

gow Tramway Department, was the main cause of municipalization. There were also many complaints of the service given by the company. The cars were said to be too few, not well cleaned, and poorly lighted at night, and the fares were thought to be too high, especially in view of the dividends that were paid. If reasonable extensions were to be made, workmen were to get fair treatment, service to be improved, fares lowered, and public interests adequately guarded, it was clear that a radical change in the relations of the city to the tramways must be secured. Even if satisfactory terms for another lease could be agreed upon, new disputes and difficulties would be likely to arise, and new resistance to the progress demanded by the city, especially toward the end of the term. There seemed to be no way to secure due dominance of the public interest in the management of street transportation, except for the city to operate the lines.

In the municipal elections of 1890 and 1891, especially the latter, municipal ownership became a test question. Public opinion was strongly in favor of municipal operation of the tramways, and November 12, 1891, by a vote of 49 to 7, the Council rejected the company's terms as unsatisfactory, and finally decided that the city itself should work the lines. Municipal operation began July 1, 1894. The old company put its omnibuses on the car routes to compete with the city tramways. In fact, there were more omnibuses on some routes than cars. The citizens, however, preferred the cars, and the attempted opposition resulted in a heavy loss to the company.

The city introduced 1-cent fares (the lowest company fare having been 2 cents) and lengthened the routes, reducing average charges about one-third. Other changes were made later, until the total reductions amount to more than one-half. Instead of working the men in one shift 11 to 14 hours a day and 7 days a week, as the company did, the city divided the force into two shifts on a ten-hour day, with 60 hours per week, and a little later (1901), a 9-hour day, with 54 hours per week. Wages were raised 15 to 25 per cent., with progressive increments year by year, so that the men now get 68 to 100 per cent. more per hour than under the company regime.[5] The city greatly extended the lines, transformed them to electric traction,[6] and has made a good profit each year, part of which has been paid into the public treasury, and part used to pay off the capital debt, extend lines, make improvements and cover further reductions in the fares.

[5] The joint report on labor and politics by Prof. Commons and Mr. Sullivan (Schedule II.) says the Glasgow Company worked the men 14 hours a day and paid them 19s. a week, or 2/10 per day. The present management states the former company pay of conductors and drivers as 3/ to 3/6 per day. We have taken the latter statement as being the most favorable to the company. The city started the men in 1894 at 4/ a day. In May, 1895, a scale of wages was adopted running up to 4/4 per day or 26s. per week in the fourth year of service. In September, 1896, the scale was changed so that the men would get 4/4 in the third year and 4/6 thereafter. In August, 1899, the 4/4 was moved up

to the second year, the 4/6 to the third and a new rate of 4/8 per day or 28s. per week was adopted for the fourth year. In June, 1901, the scale was again advanced for motormen so that they would get 28/ the first half of the third year, 29/ the second half and 30/ in the fourth year, and in February, 1905, the present scale was established, which is as follows:

| | | *Per day.* | *Per week.* | *Increase of wage per hour above company wage.* | |
|---|---|---|---|---|---|
| 1st year..... | 1st 6 months.. | 4/ | 24/ | 78% | Above company's minimum. |
| | 2d 6 months.. | 4/2 | 25/ | 85% | |
| 2d year..... | 3d 6 months.. | 4/4 | 26/ | 68% | Above company's average. |
| | 4th 6 months.. | 4/6 | 27/ | 74% | |
| 3d year..... | 5th 6 months.. | 4/8 | 28/ | 76% | |
| | 6th 6 months.. | 4/10 | 29/ | 84% | Above company's maximum. |
| 4th year..... | | 5/ | 30/ | 90% | |
| Thereafter ..... | | 5/2 | 31/ | 100% | |

These wages are for a 9-hour day and a 54-hour week. They are low according to our standards, but they are high according to British standards, and they run from 68% to 100% more per hour than the company paid. In addition to their regular pay the motormen receive a premium of 26/ for 26 weeks freedom from accidents. The men have a vacation each year on full pay and two free uniforms a year, one for summer and one for winter wear.

In order to act upon full information in deciding what form of motors it would be best to use, a sub-committee and the General Manager and Engineer were sent to the Continent and America to investigate and report on the different systems of mechanical traction. Eleven cities of Europe were visited, including Paris, Berlin, Dresden, Vienna, Hamburg, etc., also fourteen cities in the United States, including Boston, New York, Philadelphia, Detroit, Cleveland, Chicago, etc., and two cities in Canada—Toronto and Montreal. The report was in favor of the overhead trolley, and that system was adopted.

When Glasgow began to move in the matter of electric traction British tramways were practically all in the horse-age still.

The City of Leeds, which municipalized the tramways Feb. 2, 1894, had a little line 3.7 miles long, worked experimentally by electricity. It was the continuation of an experiment begun by the city in 1891. That was the first overhead electric tramway in Great Britain, but prior to 1891 Blackpool had put in a line on the underground conduit plan. That was the very first electric line in the United Kingdom, according to the Board of Trade, and it was put in by a municipal tramway management. There was a short line worked by electricity in Birmingham in 1891—12 cars out of a total of 152, all the rest being drawn by horses. The Hobart Electric Tramway Co. began operating 8½ miles of electric line Sept. 21, 1893; the Brighton & Rottingdean Seashore Electric Tramroad Co. opened its line in September, 1896; the South Staffordshire Tramway Co. worked 8 miles by electricity, the first report appearing in the Board of Trade returns in 1894. The Dublin United did not begin to operate any part of its system by electricity till 1898; the London United was all horse in 1901; 1902 no returns; 1903 nearly all electric. The Norwich Electric began in 1900. The Bristol trams were still all horse at the beginning of 1903, according to their own report.

In Garcke's Manual for 1896 and in subsequent issues the "British Electric Traction Co., Ltd.," (Garcke's own company) is marked as the "pioneer." The company, however, was not even registered till Nov. 7, 1895, as the manuals show, and how far it was from being the pioneer in electric traction is abundantly evident from the facts above stated. The City & South London Railway Co. has been presented for tramway honors as opening a short electric line in 1890. But it was an underground railroad, not a tramway, and not included in the Board of Trade's street railway returns. It is said that a 6-mile electric line was put in at Port Rush in the north of Ireland in 1883, but no such tram-

The city put on more cars at once, ran them earlier and later and at more frequent intervals. The company had 220 cars; the city began with more than 300 in 1894, and now it has nearly 800 cars, or about 5 cars per mile of track.

The municipal management made a special effort to improve the workingmen's service by adding more special cars, both morning and afternoon. Very shortly the workers were given the priv-

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way appears in the Board of Trade lists. The above statements as to the first electric lines in the Kingdom were made in answer to direct questions at the interviews given by the Board of Trade officials to our Commission.

Why the adoption of electric traction should have been so long delayed in Great Britain may be no easier to understand than the slowness of British landlords about putting in elevators, and their absence even yet from so many buildings where they ought to be, or Great Britain's failure to adopt a rational system of public schools, or the willingness manifest in all the British cities, even London and Glasgow, to continue with the old-time buildings instead of replacing them with handsome and convenient modern structures not necessarily sky-scrapers (we get too far from the ground perhaps in some of our cities) but something better than the old-time four to six-story buildings that line most of their streets to-day.

The cities declare that they would have had electric traction long before they did if the companies had not held back and made it impossible for the cities either to secure electric traction or buy them out on reasonable terms until their franchise terms expired.

The companies contend that short franchises were responsible for the failure of the former companies to adopt improvements. But the franchises are no longer now than they ever were, and yet existing companies have adopted electric traction and made other improvements the former companies said they could not make without long franchises. The short term proposition cannot explain why companies did not even *propose* the adoption of electric traction and ask for conditions that would justify the expenditure from their point of view. The municipalities have shown that even in the first four or five years a well managed electric system will yield a good profit above working expenses and depreciation so that the companies, if they had been as efficient as the municipal managements, could have made electric traction a paying investment, even if they had been obliged to sell out at real values in five, seven or ten years, let alone twenty-one years. The Liverpool company had still eighteen years to run without any extension of lease; yet it appears to have been absolutely inert—not even a suggestion from it that electricity should be adopted as the motive power in place of horses. Many cities were willing to grant franchises extensions if the companies would adopt electric traction, but they would not. They wanted unreasonable conditions. The cities would not grant terms of thirty, forty or fifty years, for such terms were regarded as contrary to public policy. If the companies could not be progressive on a short-term franchise, then they could not be progressive under the conditions essential to safeguard the interests of the public. The fact that a municipal plant can be safely trusted with an unlimited franchise, and is therefore free from the risk, real or imaginary, that attaches to the short term, is one of the advantages of municipal ownership. But it is not the real reason for the progressiveness shown by municipal systems. The moving force is the desire of the community that the service should be improved, a desire, which in the case of municipal systems, is rendered effective by the fact that the management is responsible to the people, while, in the case of company systems, that desire is rendered ineffective in so far as it conflicts, or is thought by the companies to conflict, with profits.

ilege in the afternoon, between 5 o'clock and 6.30, of riding on top of any car, on payment of the workmen's fare, and in 1901 the city reduced all fares to the level of the former working class fares. Since then the workers ride at workmen's fares or less at any time and on any car.

The number of car-miles run per year has grown from 4,944,204 in the company's last year to 18,886,910 for 1906, almost a fourfold growth in a dozen years under municipal management, or an increase of 280 per cent. against an increase of less than 70 per cent. for the last dozen years of company management. The passenger traffic also has nearly quadrupled under municipal management in 12 years, while under company management it did not even double in that length of time, the actual increase being less than 60 per cent. between 1881 and 1894.

The following table compares a decade of company management with a decade of municipal ownership, beginning with the first full year of city operation, 1895-1896:

TABLE 7.

| | *A decade of company management.* | | *A decade of municipal ownership.* | |
|---|---|---|---|---|
| | *Company operation, 1884.* | *Last year of company, 1894* | *First full Year of city operation, 1895-6.* | *Last year, 1906, returns.* |
| Cars | 233 | 220 | 337 | 788 |
| Car-miles | 3,853,156 | 4,944,204 | 6,831,379 | 18,886,910 |
| Passengers | 42,397,671 | 53,729,472 | 86,462,594 | 208,059,888 |

Since the city began to operate the tramways in 1894, they have paid in local taxes and contributions to the "Common Good," £1,771,000, or about $8,600,000, and the net profits of the tramways above interest, rents, depreciation and taxes, have amounted to £1,226,402, or nearly $6,000,000.

The benefits to the traveling public through the savings resulting from reduction of rates, are estimated at nearly $4,000,000 for the year 1906, if we compare the municipal charges with those of the former Glasgow company in 1894[1] or more than $2,260,000,

[1] The old company had no ½d. fare, and in view of the fact that the companies still operating do not make any rate lower than 1d., it is fair to presume that the Glasgow company would have been equally innocent of reducing charges to ½d. if it had remained in possession. This means that the 61,058,860 passengers, who paid £127,205 in ½d. fares in 1905-06, would have had to pay double the amount to the company for the same service—a saving of £127,205 on the ½d. traffic. On the 1d. fare 125,044,602 passengers paid £521,019. The city trams give an average of 2.3 miles for a penny fare, against 1.12 miles given by the company. In other words, the company charge was more than 100% above the city charges—it would cost more than 2d. on the average to go the 2.3 miles the city gives for 1d. Assuming that the company would have reduced charges in the same ratio that it did before 1894, i. e. 1.28% in a dozen years, the saving on the 1d. traffic would be £515,500. For all the routes from 1½d. to 3d. the company's charges were also more than double the city fares for the same distances. That means another saving of about £158,000 in 1906 as against the company's rates for the same service—making a total of £798,000 a year as the amount of reductions in fares on last year's traffic. Another method of estimate is on the basis of the average charge per mile for the whole

if we compare the Glasgow charges with the present charges of the Dublin company,[8] which is unquestionably the best managed tramway system among those that are fairly comparable with the Glasgow system in respect to location and general conditions, independent of the management.

The total savings from reduced rates for the whole 12 years of municipal management are estimated at $23,000,000 on the old company basis, and at $15,100,000 on the Dublin basis of comparison.[9]

The total benefits to the public from municipal operation of the tramways, including payments to the "Common Good," additional net profits and savings from reduction rates, amount to nearly $29,000,000 in 12 years, taking the former company as a basis of comparison in estimating the savings from reduction of fares; or more than $21,000,000 if the present Dublin company is taken as the basis for comparison.[10] The amount paid in local taxes by the municipal tramways is not included, because a part of that amount at least would have been paid in taxes by the company, had it continued to control the service.[11] We will sum up the facts in Table 8.

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service. The management estimates that its charges average .45d. per mile against .89d. for the company. That is, the company's charge was 98% above the city's charge on the average of the whole traffic—the traffic receipts in 1906 were £813,768, and 98% of that amount is £769,500—the reduction in fares for 1906 on the basis of the average charge per mile—a result not very different from that obtained by the more detailed method first applied.

[8] The Dublin company has no ½d. fare so the ½d. passengers would have had to pay double under the Dublin scale, or £127,205 more than they did pay. For practically all the rest of the tariff, as we have seen in volume I, the distances given in Glasgow are 50% or more greater than for the same fare in Dublin. To go a given distance in Dublin within the 3d zone, where the great bulk of the traffic lies, you must pay at least 50% more fare than in Glasgow. That would amount to a difference of £340,000 on the 1d. to 3d. business of Glasgow, making a total of £467,000 in Glasgow's favor as compared with Dublin.

[9] In the years preceding 1901 (the date of the second great reduction of fares) the department estimated that fares were 33% lower than under the company's regime, i. e., passengers would have had to pay at the company's rates 50% more than they paid under the city schedule. From 1902 to 1906, inclusive, the city fares have averaged about half the old company rates, so that on the company scale passengers would have had to pay nearly double (about 98%) more than on the city scale of charges. On these bases the difference between the fares paid the city and the charges for the same service on the company scale would be about £4,720,000 for the 12 years of municipal operation.

A similar comparison with Dublin gives a difference in favor of Glasgow of about £3,120,000, or about half the total traffic receipts in Glasgow from 1895 to 1896 inclusive. The estimate is probably too low for the average fare in Dublin was 3.24 cents in 1895 against 1.88 cents on the municipal trams of Glasgow, and now, though the Dublin average fare has fallen to 2.48 cents, the distances for a given fare are 50% to 100% more in Glasgow than in Dublin.

[10] This is probably the fairer basis of comparison. The estimates that have been made by comparing the charges year by year with those

TABLE 8.—PUBLIC PAYMENTS, PROFITS AND SAVINGS.

| | | |
|---|---|---|
| Paid in local taxes in 12 years | | £982,000 |
| Paid to the Common Good in 12 years | | 789,000 |
| Net profits above interest, taxes, rents, &c., actual depreciation,[12] 1906 | | 175,000 |
| Net profits above interest, taxes, rents, &c., actual depreciation,[12] in 12 years | | 1,226,402 |
| Estimated savings by reduction of fares, 1906— | | |
| On old company basis | | 796,500 |
| On Dublin basis | | 467,000 |
| Estimated savings by reduction of fares, 12 years— | | |
| On old company basis | | 4,720,000 |
| On Dublin basis | | 3,120,000 |
| Net profits plus estimated savings by reduction of fares— | | |
| On the former company basis | | 5,946,402 |
| On the Dublin basis of comparison | | 4,346,402 |
| The benefits of municipal operation to labor are estimated at $515,000 a year, distributed as follows: | | |
| Reduction of hours | | $288,000 |
| Increase of wages: | | |
| Regular force | $158,400 | |
| Spare men | 24,000 | |
| | | 182,400 |
| Holidays on pay | | 14,400 |
| Free uniforms | | 30,240 |
| Total | | $515,040 |

Employment is by competitive tests, and no political influence is allowed to interfere in any way with the efficiency of the force.

of the old company are reasonably fair for the early years of municipal management, but they are not wholly fair for the later years because it is not to be presumed that the company would have made no reduction at all in its charges during the 12 years from 1894 to 1906 had it secured a renewal of its lease, although as a matter of fact the company did make almost no reduction of charges during the 12 years preceding 1894, the average fare being 2.33 cents in 1882, and 2.30 in 1894.

[11] We say a part of the taxes would have been paid for the attitude of the company toward extensions indicates that it would not have enlarged the system nearly so much as the city has, and therefore would have paid a smaller amount of taxes than the municipal system.

[12] Net profits are found by deducting from income the following items: (1) Operating cost including maintenance and taxes; (2) interest on loans; (3) rent of leased lines; (4) parliamentary expenses, if any; (5) depreciation.

The actual depreciation is found by taking the depreciation of the electric system according to the determination of the Commissioner's engineers (averaging 4.7% a year) and adding the whole cost of the horse system used by the city before electric traction was put in. In the case of Glasgow the whole value of the horse system, £186,637, was written off out of revenue during the first eight years of municipal operation, and in addition to this £600,000 has to be deducted to cover depreciation on the electric system down to June, 1906.

There has been no friction between the management and the employees in the whole 12 years of municipal operation, neither has there been any effort on the part of the employees to bring pressure on the Council, or from any sort of political organization to push their special interests. Such action on the part of municipal employees has been predicted by the opponents of municipal ownership on both side of the water, but it has not yet materialized, and Glasgow's long experience gives no hint of danger in this direction.

There are no politics in the management of the Glasgow tramways. There is no street railway graft in Glasgow; no lobbyists endeavoring by questionable methods to get special privileges for public service companies; no high-priced attorneys squeezing the unearned increment out of the monopolies; no advertisements even on the cars—perhaps nothing else so clearly shows how far the public street railway management is from being dominated by commercial motives—the city foregoes $50,000 a year, which it could get in a lump sum for the privilege of advertising on the cars, in order that the people's carriages may have a little added dignity and beauty. No merchant would sell space to advertise Pears' soap, or Carter's Little Liver Pills, or Mennen's Borated Talcum Powder on the sides of his carriage or automobile, and the municipal management believes there is no reason why the public's carriages should have less dignity than those of the individual merchant.

Years ago, in the early days of municipal management, in Glasgow, the writer asked John Young, the General Manager of the tramways, why the city had sacrificed £10,000 a year for the sake of abolishing the advertisements from the cars. He said it was done for esthetic reasons. Pointing out of the window of the tramway office, he said: "Over 400 cars per hour go by this window, or any given point on the principal streets and the appearance of these cars must have a decided effect upon the esthetic development of the people."

The total receipts of the city tramways in 12 years have been $30,610,000, and the total working expenses have been $18,375,000. Perhaps the most interesting of the financial facts relating to the Glasgow tramways are: (1) That it has paid off over $2,400,000 of the tramway debt (May 31, 1906), so that the remaining debt is less than the structural value of the plant, plus the cash and stores on hand, by an amount exceeding $4,000,000. And (2) that the $5,600,000 provided for depreciation and renewals down to May 31, 1906, is at least $1,500,000 more than the actual depreciation to that date, according to the valuation and rate of depreciation fixed by the Commission's engineers.[13]

We were told before we sailed for the British Isles, that there was a strong reaction against municipal ownership in Glasgow and other cities in Great Britain; that there was vigorous opposition in the Glasgow Council, and that prominent business men had formed a "Citizens' Union" and a "Ratepayers' Association" on purpose to fight municipal ownership. It was also impressed upon

[13] See Schedule III.

us that the city tramway management had neglected to extend the lines into suburban districts and had therefore "failed to distribute population," and was responsible for the density of population in the congested areas of the city.

In view of this, especial pains were taken to look up the opposition in Glasgow, and hear what they had to say, and also to investigate the matter of extensions and the relations of the tramways to the problem of distributing population. We met the "most vigorous opponent" of municipal ownership in the Council; there were only three or four alleged opponents altogether among the 80 members of that body. Some of the Commission dined with the man who has for years been the leading spirit in the "Ratepayers' Association," and signed statements were obtained from the Secretary of that organization and the organizer of the Citizens' Union.[14]

The "most vigorous opponent" said he agreed to municipal operation of water, gas, electric light and also tramways in the city, but not outside. He objected to municipal operation of telephones in Glasgow, because of the competition involved and the necessity of paying for both telephone services, and he was also opposed to municipal banking, insurance, tailoring, etc., and all other proposals looking to the extension of "municipal trading" into the field of competitive commerce or manufacturing. This seemed reasonable, except the objection to extension of the tramways into suburban districts—we had been assured that it was the city tramways, not their opponents, that objected to extensions.

[14] Aside from the matters dealt with in the text, it was stated in criticism of the city tramways that streets have been widened for the tramways at the expense of the city, Hope street being named as an instance; that the street department replaces the paving for the tramways, thus charging the cost to the wrong department; and that the tramways and electric light departments are worked under separate committees. At one of the commission's hearings evidence was taken on these points, and it developed that no street had ever been widened for the tramways in Glasgow. There were no tramways on Hope street, and no intention of putting them there. The tramway department had stated its willingness to make a handsome contribution to the street improvement fund for the widening of Hope street in case it should put trams on that street, but did not expect to do so probably for ten years to come. When a street was lowered to escape a bridge the tramways paid the cost, and all street costs incurred for the benefit of the tramways have been paid by that department.

The statement that the city street department replaced the paving for the trams turned out to be incorrect. No other department than the tramways department pays any expenses that belong to the trams, or does any work free for the trams.

The proposition for a joint committee to operate both the trams and electric light departments was lost by only one vote—Lord Provost Chisholm casting the deciding vote. The impression among city officials in Glasgow now is that it would have been better to unite the two departments under one committee, with a subcommittee to generate electricity, and another to manage the trams. "But after all," they say, "there are some advantages in the present arrangement for there is a healthy rivalry between the two committees, and both departments are large enough to buy coal and supplies at the lowest rates and obtain and use their labor to advantage."

On inquiry, it appeared that the objector in question has large railway interests and does not want the trolleys to parallel the railroads on suburban routes; the railroads have already had to take off a number of trains because of such competition, and they do not desire any more of it.

The "Ratepayers' Federation" was "formed to oppose the Glasgow Housing Scheme of 1902, when the city sought power to build houses on a huge scale for the working classes." The scheme was defeated. The Federation has also opposed municipal competition in the telephone service, and in the supply of electrical appliances, gas fittings, lamps, cooking stoves, and other municipal undertakings in competition with private enterprise.

The Citizens' Union was formed in 1898 "on non-political and unsectarian lines for furthering the good government of Glasgow, by securing the election of suitable persons to the Town Councils." The leaders of the two organizations, "Citizens' Union" and "Ratepayers' Federation," are largely the same, the same men organized both, they have their offices together, and they stand in substantially the same attitude toward municipal trading, but the Citizens' Union has been the most active in local affairs. It is opposed to the establishment of municipal cemeteries, municipal insurance, municipal banking, and municipal house building, and has also "placed its views before the Town Council in opposition to the extension of the tramways into the country,"[15] but "favors clearing slum areas and municipal gas, water, electricity and tramway supply."[16]

Here again we find that the alleged opponents of municipal ownership are not in opposition to municipal ownership as the phrase is used in this country, but, on the contrary, "favor municipal gas, water, electricity and tramway supply." What the Citizens' Union and the Ratepayers oppose is not the municipal ownership and operation of municipal monopolies, but the invasion of the

[15] From the signed statement of Robert Bird, who organized the Citizens' Union, worked with Mr. Arthur Kay in forming the Ratepayers' Federation, and is now the secretary of the latter association.

In his chapter on British municipalities Professor Goodnow states the case in regard to the "Ratepayers' Federation" and the "Citizens' Union" with great clearness and accuracy as follows:

"The policy of these associations, as stated by their secretaries, has not been to oppose the municipalization of trams, gas, electric and water supply. Indeed, they have no criticisms to make on the administration of these enterprises in Glasgow, when confined to their proper spheres. At the time the Citizens' Union was organized, in 1898, the socialistic program was in full swing, and there were propositions seriously considered by the Council of extending municipal ownership further—to housing, banking, insurance, cemeteries, tailoring, baking, etc. It was these extensions that the Union was organized to combat."

As a matter of fact, the tailoring and baking schemes never had any chance of passing any way. The number of Socialists in the Council has always been small.

[16] The exact wording is: "We favor clearing slum areas and municipal gas, water, electricity and tramway supply." "We favor" changed to "favors" in order to unite the clause with the quotation relating to extensions.

field of competitive business—as banking, insurance, storekeeping, etc. (proposed by the Socialists and a few of the more radical members of the Council), "huge house building schemes for housing the working clases," and "unwise and unnecessary extensions of the tramways into the country."

So it is the business men who hold railway stocks and own real estate in the city who object to extensions of the street railways into suburban districts, which they fear may diminish the value of railway stocks and city property. But in spite of the objections of railroads and city landowners, the department has pushed its lines out into the country until it has suburban extensions more than 16 times greater than those of the company period.

## Extensions.

In the company period during the 12 years preceding municipal ownership, 8 miles of extensions were made. In the 12 years of municipal operation, the extensions of the tramway lines amount to over 50 miles. In the last 6 years of the company period, from 1888 to 1894, there were no extensions at all. When the city took possession in 1894 it began at once to extend the lines. On pages 26 to 28 of the Official Report for 1906 there is a list of all the tramway lines, with the date of opening each section, its length and location, whether inside or outside of the city limits. Prior to July, 1894, there were 28.3 miles of line inside of the city, and only 1.8 miles outside. In 1906 there were 51.1 miles of line inside, and 29.4 miles outside,[17] practically all double track, both inside and out (Table 9). The situation in a nutshell seems to be this: The company was opposed to extensions, according to its own statement quoted above, and during its 23 years only 1.8 miles of line were built outside of the city, notwithstanding the efforts of the city to secure extensions. The municipal tramways on the other hand, favor extensions, and have built 27.6 miles outside the city in about half the period covered by the company control; a rate of suburban extension under municipal management 30 times the rate for the company period.

Table 9.—Suburban Extensions.

| | *Total miles of line.* | *Miles of line* | | *Annual rate of suburban extension, miles.* | |
|---|---|---|---|---|---|
| | | *In city.* | *Outside.* | | |
| 1894 ..... | 30.1 | 28.3 | 1.8 | .078 | for company period. |
| 1906 ..... | 80.5 | 51.1 | 29.4 | 2.3 | for city period. |

| | *Miles.* |
|---|---|
| Total extensions in city and outside under company in 12 years preceding municipal operation ..... | 8 |
| Total extensions in 12 years of municipal operation..... | 50 |

[17] The Glasgow ratio of extension in suburban areas compares the outside mileage being, however, inside of Greater Boston. The Cleveland companies have only 17 per cent. of their track outside the city. The Philadelphia Rapid Transit Company, operating practically all the lines in that neighborhood, has 12 per cent. of its track outside the city. In the municipal tramway system of Glasgow 37 per cent. of the track operated is outside the city in suburban areas; and in the Manchester system 28 per cent. of the track is outside.

The company's longest route was 3.23 miles. The city soon ran out to 5.2 miles, then to 7 miles, and since 1902 the longest route has been stated as 12.93 miles.

TABLE 10.—STAGES AND FARES, BEFORE AND AFTER.

| | *Miles.* | *Fares.* | | *No. of stages of each class.* | *Average distance, miles.* | *Fare* |
|---|---|---|---|---|---|---|
| | | | | 161 | .58 | ½d. |
| | | | | 152 | 2.30 | 1d. |
| | | | | 120 | 3.48 | 1½d. |
| | | | | 100 | 4.59 | 2d. |
| The company | 1.12 | 1d. | The city | 74 | 5.88 | 2½d. |
| had only four | 1.80 | 1½d. | has 12 | 51 | 6.90 | 3d. |
| stages as here | 2.20 | 2d. | classes | 35 | 8.11 | 3½d. |
| given. ..... | 3.23 | 3d. | of stages, | 24 | 9.19 | 4d. |
| | | | as here | 15 | 10.15 | 4½d. |
| | | | shown. ... | 8 | 11.14 | 5d. |
| | | | | 4 | 12.00 | 5½d. |
| | | | | 1 | 12.93 | 6d. |

The city still continues to extend its lines. In the last five years, 1902-1906, extensions have amounted to 36 miles.

The rapid extension of the tramway lines into suburban areas, together with the great reduction of fares, has led to a great increase in the erection of dwelling houses in the vicinity of Glasgow in the last few years. In one suburban district, Clydebank, 1904-1906, 2,800 houses were erected and 600 more were in course of construction. In another neighborhood, the upper ward of Renfrew, 3,269 houses have been built in five years. In all we have a list of 13,705 houses erected in the vicinity of Glasgow in the last six years. Residents say there never has been such a period of suburban building in the history of Glasgow. Property owners in the city see in all this a danger to their rental values, and are naturally inclined to oppose extensions which they fear may build up the country at the expense of the city, and diminish the value of their city holdings.

At one of the Commission's hearings, Bailey Alexander, "Convenor" or Chairman of the Tramway Committee, was asked "Is it part of the policy of the tramway system to carry people out into the country?"

Bailey Alexander—"That was one of the reasons we gave to Parliament when we asked for power to operate the tramways."

"Has that policy been carried out?"

Bailey Alexander—"Yes; it has been carried out with great success. For long-distance suburban traffic the railways in this and other British cities make rates that are very low,[18] too low to

[18] Even for distances of 7 or 8 miles the working class railway fares are very low. To and from Paisley, for example, 7 miles out of Glasgow, the Caledonian and the Glasgow South-Western carry working people for 1s. a week or 2 cents a trip; and to Clydebank, 7.8 miles out, the North British and the Caledonian make a rate of 1s. 3d. or 2½ cents a trip. The single fares by railway are 5½d. and 6d. third class and 9d. and 10d., respectively, for first class, against 3½d. by trolley, which is all first class. Within a radius of 7 or 8 miles the railroads carry 26,756,900 suburban passengers, and within the same radius the trolleys carry a total of about 200,000,000 passengers. Far the larger part of this tramway traffic was for distances below 2½ miles.

make it wise for the tramways to compete, but within the range of reasonable tramway traffic we have done a very great deal to carry the people out of the crowded districts by greatly lengthening, more than doubling, the distance the passengers can travel for 1d., and by other means.

"The railways have opposed us for fear we'd take away their custom, and they were right; in some cases the railway service got so thin the management took off the trains.

"Local authorities have opposed us, not because they object to extensions, but simply to protect their rights and get all they can out of us.

"We have been opposed also by a class of people inside, who say: 'If you take people outside, our city property will depreciate.'

"Again, we have the critic who says the suburbs are too thinly settled, and traffic will not pay out there.

"These objections have been falsified. Property in Glasgow has not depreciated because we have taken people out, and the department has not lost money, but has built up an ever-increasing traffic as the lines have been extended."

### Manchester.

Manchester is a busy manufacturing city of about 640,000 population. The city built the tramways, the first line being opened in 1877, and leased for 21 years from May 1st of that year at a rent of 10 per cent. on the cost. Subsequent lines were leased on payment of £300 to £450 per mile of single track. The leases were made to terminate on various dates from 1898 to July, 1902.

In February, 1895, a few months after Glasgow began to operate her street railways, the Manchester Council appointed a committee to report on the question of municipal operation. After two years of investigation the committee recommended the municipalization of the tramways and the adoption of the trolley system of electric traction; and December 1, 1897, the Council adopted these recommendations. How strong the sentiment was in favor of municipal operation, appears from the fact that the Council voted 68 to 0 to work the tramways.[1]

The principal reasons given for the adoption of municipal operation were: (1) To secure better service, especially the introduction of mechanical traction. (2) To obtain lower fares—the average of the company's fares in 1895 being over 4 cents against an average fare of 1.8 cents in Glasgow under municipal operation. (3) To secure for the city more complete control of its streets and their monopoly uses. (4) To improve the conditions of labor, following the example Glasgow had set. (5) To extend the lines and to secure the social advantages of making suburban areas easily accessible to the people at low fares. (6) To transfer from the company's shareholders to the public the profits of the public patronage of the tramway service.

After much negotiation, an agreement was made with the company July 21, 1899, providing that all leases in Manchester

[1] See Schedule I.

should terminate May 31, 1902, and that the city should have the right to reconstruct and operate any line before that date, the payment for this privilege being the average net profit of the company per mile of track. The city has paid the company £263,158, a large part of this payment being made to get the company to permit reconstruction and the transfer of the lines, route by route, as reconstructed before the end of the franchise terms.[2]

The city began to operate the first lines in 1901, but did not get full possession of the system until March 31, 1903. In October of the same year the department reorganized the fares and stages, reducing the average fare from 4 cents to 2.38 cents, and increasing the distance given for 1d. from one mile 100 yards under company management, to 2 miles 200 yards under municipal management. The company's charges for a given distance were double the charges of the city.

One of the definite purposes of the public tramways has been to extend the lines and reduce fares in such a way as to distribute population more widely and relieve the congested districts of the city. The company operated 103 miles of track, the city operates 148 miles, 42 miles being outside of the city, and arrangements are now in progress for further large extensions. The city has made working agreements with 18 neighboring municipalities.[3]

This union or federation of cities is one of the most interesting parts of the Manchester system. It is the centre and general agent of a great co-operative system of tramways.

A few words about the Tramway Express Service may be of interest here. Human beings are not the only things the British tramways carry. The tramway acts permit the carriage of coal, iron, timber, sugar, flour, cotton, furniture, horses, mules, cows, sheep, pigs, and all other kinds of "animals, goods, wares, merchandise, articles, matters, or things," including even manure, sand, bricks, and carriages. The maximum tolls and charges are fixed by law.

As a matter of fact, however, the tramways have not gone into the freight business, but Manchester and Dublin do a considerable express business; and the Norwich lines carry a few packages, but

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[2] The city paid £210,000 for the lines owned by the company, including 20 miles of way, 8 depots, 194 cars and 1,418 horses. The company claimed originally £510,000 altogether, but arbitration and litigation greatly reduced the amount, and finally an agreement was reached with the result stated in the text (see Schedule I.).

[3] In general these agreements provided that each local authority was to own the lines within its area, reconstruct them for electric traction, lease them to Manchester for 21 years, and refuse to lease new lines to any other party. Manchester was to equip and maintain the lines on the overhead trolley system, pay all local rates and taxes, and a rental sufficient to pay off the capital with interest, in 21 years, plus the cost of maintaining track and paving. In the case of Salford, Ashton and Oldham, which operate their own systems, agreements were made to exchange running powers so that cars from Manchester might run over the Salford, Ashton and Oldham lines, and cars from each of these towns might run to the center of Manchester.

the business is very small, the total receipts for 1905 being only 112 pounds. The Manchester trams carry 25,000 parcels a week, and the receipts for 1905-6 were £11,996. The financial result for the first twelve months of this department has been unsatisfactory, there being a deficit of £5,770. This has been partly due to the fact that practically at the very beginning of the service legal proceedings were begun against the department by a local carrying firm, with a view of obtaining an injunction restraining the city from carrying on the business. The result of the trial was to establish the right of the city to do practically all they claimed a right to do. The total receipts for the Dublin express are not given, but the profit for the year ending December 31, 1905, was £3,000.

Taking the charges and distances shown in Table 11, and the notes appended to it, it appears that the Manchester rates within the district corresponding to the area covered by the Dublin system are practically 50 per cent. less than the Dublin rates for the same weights and distances. For the outside districts the rates come abreast of the Dublin charges, and on very light packages are higher than the Dublin rates, but the distances goods are carried by the Manchester express for a given charge are more than twice as great as the Dublin distances, so that taking both rates and distances into account the Manchester charges are only about one-half the Dublin charges in the suburban districts also. If, therefore, Manchester had received the Dublin rates on the business done last year, the department would have realized a very comfortable profit. It may be that the Manchester express charges are too low—an astonishing phenomenon for express rates to be suspected of—but still a possibility with a municipal express.[19]

[19] Since the text was written word has come from the Manchester management that the part of the business requiring the use of horse vehicles for collection and delivery has been discontinued, limiting the service to business that can be carried on by the tram cars with the aid of messengers. This was deemed better than continuing the team delivery with a higher schedule of charges, especially in view of the protests of local express interests against tramway competition in the heavy traffic.

Under the new arrangement, taking effect Oct. 29, 1906, parcels not exceeding 14 lbs. in weight may be handed to the conductor of any street car at any stopping place for delivery by messenger anywhere within half a mile of any Manchester tramway line. The charges are 2d. for packages not exceeding 7 lbs. and 3d. for packages from 7 to 14 lbs. The parcels express book contains a list of places over half a mile from the Manchester lines in which parcels will be delivered at a uniform charge of 3d. per package up to 14 lbs. "When shopping," says the little express book, "order your parcels sent home per tramways, or hand them to the guard of a passing car." All parcels must be prepaid with stamps, and the department will insure the value up to $125.

Parcels not exceeding 56 lbs. are accepted at the city depots for conveyance to any of the outside offices to be left till called for. The charge for this service is 3d. per package.

The department is now making a good profit on its express business.

TABLE 11.—TRAMWAY EXPRESS RATES.

| [1] *Dublin Tramway Express.* | | [2] *Manchester Tramway Express.* | |
|---|---|---|---|
| Up to 4 lbs. weight..... | 2d. | | |
| Up to 14 lbs. weight..... | 3d. | Up to 14 lbs. weight..... | 2d. |
| Up to 28 lbs. weight..... | 4d. | Up to 28 lbs. weight..... | 3d. |
| Up to 42 lbs. weight..... | 5d. | | |
| Up to 56 lbs. weight..... | 6d. | Up to 56 lbs. weight..... | 4d. |
| Up to 84 lbs. weight..... | 9d. | | |
| Up to 112 lbs. weight..... | 1s. | Up to 112 lbs. weight..... | 6d. |

The receipts of the tramways in 5 years to April, 1906, have been $11,385,000. The profits above working expenses have been $4,000,000 and the net earnings above interest, etc., about $2,830,000. About $1,265,000 of net revenue has been appropriated to depreciation and renewal funds; $510,000 to sinking fund and redemption of debt, and $955,000 to reduction of the local tax rate. The tramways are now paying about $250,000 a year in relief of taxation, in addition to the payment of the regular taxes.

The advantages to labor from municipal ownership are very marked. The city reduced the hours of work from 70 to 54 per week, and increased wages at the same time. The concessions granted to employees as compared with their condition under the company, amount to 43 per cent. in the case of motormen and 63 per cent. in the case of conductors, and are estimated to be worth £40,000, or nearly $200,000 a year.

Political influence is not allowed to enter into the employment of the men. July 9, 1901, the Council resolved: "That it be an instruction to the officials of this committee (Tramway Committee) that all letters presented by those seeking employment, from members of the Council, be ignored, and that a preference be given to those men who apply in the legitimate way." In other words, the attempt to use political influence defeats the end in view. It is true that Councilmen do not have to write requests for employment of their friends. They can telephone or they can

[1] Parcels are collected and delivered anywhere within the city of Dublin and within one mile of the company's ten stations outside of Dublin, comprising a circular area with a radius of not quite four miles, at the rate stated in Table 11. A special rate of 7d. is made for traders' light goods from 56 to 84 lbs., and 8d. from 84 to 112 lbs.; laundry baskets over 56 lbs., 6d.; half rate extra for frail or breakable articles. For delivery beyond one mile from the company's stations 2d. per parcel per half mile up to 28 lbs., and 4d. per half mile up to 56 lbs. is charged, but no parcel will be delivered beyond two miles nor can punctual delivery outside of the one-mile distance be guaranteed. Parcels are called for or may be given to street car conductors.

[2] The Manchester system collects and delivers parcels anywhere within the cities of Manchester and Salford and part of Stratford at the rates stated in Table 11. Beyond this area, to and from any point in some 66 districts, including all the large towns in the neighborhood of Manchester, except Bolton, and extending some 11 miles to the north, 8 miles to the east, 9 miles to the south and 6 miles to the west of the center of Manchester, the rates are 3d. up to 14 lbs., 4d. to 28 lbs., 6d. to 56 lbs. and 8d. up to 112 lbs. Breakable articles are carried at the ordinary fares, unless the department insures them, and then they go at double rates. Parcels are called for or may be left at any one of the 150 depots.

whisper. But the manager is free to disregard all such requests, regardless of the form in which they are made, and his entire freedom of action in employment and discharge is sustained by the Tramway Committee. No politics have ever entered into the appointment of the staff of the department.

When asked to state the aim of the Tramway Department, the main purpose it keeps always in view, Manager McElroy said: "Service is the first consideration—safe, comfortable, convenient, rapid service at reasonable cost. Then we must consider the rights of employees, and finally, we try to make a profit that will enable us to cancel our debt in due time and pay a round sum into the public treasury each year." Manager Dalrymple, of the Glasgow tramways, said, in answer to the same question: "The aim of the city in the operation of the tramways is to give the citizens the most up-to-date, efficient and cheap service that it is possible to give, always, of course, keeping in view the commercial soundness of the undertaking."[5]

The difference between public and private tramways in their fundamental aim and purpose is very marked. The companies, of course, are in business for the profit of their stockholders, and the managers frankly admit that this is their controlling purpose, while the managers of public systems state with equal force that profit is a subordinate consideration, the primary purpose being good service at low cost to the public.

### Liverpool.

Liverpool is a shipping and manufacturing centre, with a population of 739,000 in 1906. The tramways in Liverpool were built by a private company, the first line being opened in 1869. The company allowed its tracks to get into such poor condition and become so destructive to street traffic, that in 1874 the city ordered the tracks removed, under the authority given in the Act of 1868 to order the removal of the tracks in five years if they proved to be detrimental to public interests. The company brought suit, and

[5] The answers of all the tramway managers to this question were substantially to the same effect. For example, Manager Mallins of the Liverpool tramways said: "The company management aimed to make a dividend; the city management aims at the good of the community, employees included." Manager Fearnley of the Sheffield tramways said: "We try to give the city the best possible service at the lowest possible cost consistent with the fair treatment of labor." Manager Baker of the Birmingham tramways said: "The companies operate only for what they can get out of it; the city operates with regard to the public welfare and makes a lot of money out of it after all." Mr. John Young, first manager of the Glasgow tramways, said: "The policy of the city is to give the best and closest possible service of cars at the lowest fares which will leave a safe margin of profit and afford fair treatment for labor." The late C. R. Bellamy, first manager of the Liverpool tramways, said to the writer in answer to the same question: "The department uses the tramways to serve the public interest by good service at low cost, liberal treatment of employees and a schedule of routes and fares arranged with due regard to general industrial and social considerations as well as with regard to the financial interests of the department."

threatened to fight every step in the courts. That meant that conditions would continue as they were for a long time, and little would be gained, even if the city were successful. In addition to poor service, the fares were very high, and there were only 7 miles of track in a city of 400,000 inhabitants. After due deliberation, the City Council concluded to buy the lines. The agreement was made in 1879, and the ownership of the lines was vested in the city January 1, 1880.[1]

In 1895 the agitation for municipal ownership began. Glasgow was operating her tramways and appeared to be making a success of it. The Manchester company was non-progressive. The service was characterized as "dear, slow and dirty." It was also inadequate, and the fares were high, nearly 4 cents per passenger against 1.8 cents in Glasgow. There were also loud complaints of the condition of labor. The men worked 7 days in the week, with an average of somewhere between 13 and 14 hours a day, or 91 to 98 hours per week. To cap the climax, the company opposed the city's bill in Parliament for the extension of the city boundaries. The city had to extend the company's lease 10 years, in order to persuade it to withdraw its opposition, for the Committee of the House of Commons which was considering the extension bill, said that the company should have a 10-year extension or the bill would not go through. This opened the eyes of the people to an understanding of the hold the company had upon them, and its power to obstruct the normal development of the city.

November 18, 1896, the Council voted 78 to 7 for municipal operation of the tramways, and January 13, 1897, the measure was again approved on final vote of 71 to 16. The city paid £631,540; over £266,000 of the amount being for the franchise value of the 18 remaining years of the company's term.[2]

The city took possession September 1, 1897, and at once arranged to scrap the entire undertaking and adopt electric trac-

[1] The city paid £30,000 or about £4,300 per mile of track. The lines were leased to the company at a rental of 7½% on the purchase price, the city agreeing to maintain the track. In 1884 a new lease was made for 21 years, the city to build and maintain the lines and the company to pay a rental of £5,855 for existing lines and 10% on the cost of new lines, including the expense of paving. In 1895 still another lease was given, to expire Jan. 1, 1915, and including all the lines in the city. (See Schedule I.)

[2] The stock was bought at a slight advance on the market value, which was well above par—£567,375 being paid for £452,500 par value of securities (£7,500 bonds and the rest stock), or £114,875 above par value. Besides this, £46,803 was paid for capital spent by the company, but not included in share capital, and £17,362 more was paid to directors, auditors and solicitors, under an agreement by which the city undertook to pay five directors the capitalized value of an annuity equal to the fees they would have received up to the year 1915, or at their death if it should occur before that time, to compensate auditors and solicitors in like manner, and to take over all the officers and employees at the salaries and wages they had been receiving. The city paid altogether £631,540. According to the company's statement to shareholders the capital invested was £364,657. So the city paid over £266,000 for the franchise value.

tion. The city adopted the overhead trolley and opened the first line in November, 1898. In the next two years the whole of the 68 miles of track were reconstructed for electric traction, together with 40 miles of additional new track, about three-quarters of it being in the suburban areas, added to the city in 1895. The traffic was carried on during the reconstruction. The total carrying capacity was quadrupled, the fares reduced by one-half to two-thirds, the wages of employees largely increased, their hours of labor reduced from 91 or more per week to 60 per week, and all were given free uniforms, sick benefits, superannuation payments, etc.[3]

The management estimated in 1903 that the direct gain to employees through municipal ownership was about $200,000, or one-third of the total wage payment. Mr. C. R. Bellamy, who was then manager of the tramways, said: "It would have cost $200,000 less if we had worked the men the same hours and paid the same wages as the private company did; so that in hours and wages the men have gained an equivalent of 50 per cent." This was the voluntary action of the city, without any pressure from the men.

When the city began to reconstruct the lines in 1898, it adopted 2⅓ miles as the standard stage for 1d., increasing the average distance for 1d. from 1,232 yards under company control to 4,191 yards under city control, a 240 per cent. increase. In other words, under municipal operation the passengers are carried over three times as far for a penny as under private operation, and with an average speed of 8 miles an hour against an average of 5½ miles under company management. The savings to the public from reduction of fares are estimated at over $2,500,000 a year—they would have had to pay over that much more than they did if the company rates and distances had continued. The closest service the company gave was a headway of 7 minutes, with longer intervals on most of the lines. The city has cut the minimum headway down from 7 minutes to ¼ of a minute, and the maximum headway from an hour to a quarter of an hour. The substitution of electric traction for horse power was, of course, a part cause of these improvements, but the adoption of electric traction was one of the direct results of municipal operation. No move or proposal of the company is on record for the adoption of electric traction, either on condition of extending the franchise or on any other condition.

The city's cars, clean, well-ventilated and brilliantly lighted at night, form a remarkable contrast with the little, dark, dirty, ill-ventilated, swaying, uncomfortable vehicles the company was satisfied to operate year after year, while other cities in Europe and America were enjoying the advantages of electric traction. The department has experimented with cars of various patterns, from

[3] During disability the employee receives 15s. per week for the first six months, 7s. 6d. per week for the next six months. One-third of the contributions are paid by the department, and the rest is contributed by the men.

the long American car to the English double-decker, with the glass sides and roof for the upper deck, adjusted in such a way that the whole top may be opened and closed in a moment. This type of car proved to be most popular with the public, and has been adopted as the standard car for the entire system.

The increase of traffic and receipts is shown in the accompanying table:

TABLE 11.—TRAFFIC AND RECEIPTS.

| *Year*..... | *Car Mileage.* | *Passengers.* | *Receipts.* | *Increase in Traffic Receipts.* |
|---|---|---|---|---|
| 1897..... | £6,013,180 | £38,409,084 | £290,743 | ..... |
| 1905..... | 12,067,033 | 119,123,644 | 550,084 | £259,341 |

The increase for 1905 over 1897, the last year of the company's control is as follows, viz.:

| | |
|---|---|
| Car mileage..... | 100 per cent. |
| Passengers ..... | 210 per cent. |
| Receipts ..... | 89 per cent. |

Like the municipal tramways of Glasgow and Manchester, the Liverpool trams have done much for the distribution of population, by making suburban areas easily accessible at low fares. On the long routes out of the city a maximum fare of 4 cents has been substituted for the company's charge of 12 cents. The effect on building in the outlying districts has been very marked.

During the four years, 1895 to 1898, 3,613 houses were erected in the suburban areas added to the city when its boundaries were extended; in 1898, 2,023 houses were erected in these areas, and in the four years, 1900-1903, 6,696 houses were built, being an increase of more than 85 per cent. over the four years 1895-1898. Inside of the old city, during the four years, 1895-1898, 1,776 houses were constructed, while in the four years following 1899, 1,055 houses only were built, a decrease of 40 per cent. on the figures applicable to the old city, including laborers' dwellings erected by the corporation.

In six years of municipal operation the tramways have made nearly $6,000,000 of net earnings, and have paid $740,000 in relief of taxation. The aim of the municipal management is not profit for shareholders, but the good of the community, including the employees. The profits of the city tramways benefit about 800,000 people, instead of 1,750 shareholders, who got the profits of this important public service under the company regime.

That Liverpool has found reason to be satisfied with the change from private to public operation of the tramways was proved two years after the city came into possession, when a Liverpool syndicate made an offer to lease the lines from the city, provide an efficient service, and at the end of thirty years hand back the whole undertaking free of all debt, paying off the whole price the city had paid for the lines and the cost of reconstruction. The City Council rejected this offer without hesitation, being convinced that if a company offering these terms could make the tramways

pay, the municipality could do the same with far better results to the community.

**London County Council.**

The Elective County Council succeeded the Metropolitan Board of Works in 1889, and October 27, 1891, the Council by a vote of 90 to 2 decided to buy 4½ miles of the London Street Tramways Company lines[1] (the franchise having expired that year), and notice was served upon the company. The company claimed £604,090 compensation, on the basis of rental value capitalized at 20 years' purchase. The Council held that structural value, or the cost of duplication, less depreciation, was the measure of compensation under the law, and that no allowance should be made on account of earning power, past or prospective, good will, or value as a going concern. The courts sustained the Council, deciding that the measure of compensation was the cost of replacement less depreciation.[2]

So the company got £101,798, or about one-sixth of the amount it claimed. The Council took the lines and leased them back to the company August 1, 1895, at a rent of £5,729 a year.

In December, 1892, while the first purchase was still in the courts, the council served notice on the North Metropolitan Tramways Company for the purchase of 8 lines, having a total length of 19 miles. This led to an agreement in 1896 with the two companies above named, by which the Council bought all the lines of those companies in London County, 48 route miles (about 97 miles of track), with depots, for £805,869, and leased the lines for operation to the North Metropolitan for 14 years from midsummer, 1896.[3]

The first line south of the Thames became purchasable in 1895, 2½ route miles, belonging to the London Tramways Company. The Council bought it in, but left the company to work it for a time.

January 1, 1899, the Council took possession of all London Tramways Company lines (about 24 route miles), the franchise

[1] Prior efforts had been made to pass the measure at two meetings, June 9 and July 14, but members who were opposed to purchase left the chamber before the vote was taken, thus reducing the number on the floor below the two-thirds required by law to be present when a tramway purchase vote is taken. In each case the motion for municipal purchase was carried by large majorities, 69 to 2 on June 9, and 86 to 3 on July 14, but both votes were inoperative because two-thirds of the Council were not present on the floor. A number of the opposition were in the galleries, but they could not be counted there to make up the two-thirds. At each of the three meetings the motion as carried contained an amendment to the effect that the Council would not work the lines. This provision did not amount to much, however, for the Council had no authority to work the lines, and did not obtain such power from Parliament till 1896.

[2] See London Street Tramways Company vs. London County Council, 1894 A. C., 489: 63 L. J. Q. B., 769.

[3] Report of the Council, 1900-01, page 89. The purchase did not include the cars, horses, etc., the ownership of which was to be in the lessee company, the Council agreeing to buy them at a fair valuation on the expiration of the lease.

having expired in 1898, and has since operated the lines as a municipal system. Five other undertakings have been taken over at various dates from 1902 to 1906, and April 1, 1906, the Council took over the operation of the 48 miles leased to the North Metropolitan. The lease had four years more to run, but to unify the tramway system and secure electric traction, negotiations with the company for that purpose having failed, the Council bought out the company, paying £120,000 for the surrender of the lease and £221,202 for the company's horses, cars, etc.

TABLE 12.—LINES BOUGHT BY THE L. C. C.

| | *Year.* | *Route Miles.* | *Purchase Price.* |
|---|---|---|---|
| North Metropolitan and London Street Tramways Co. | 1897 | 48 | £805,869 |
| London Tramways Co. | 1897 | 26.12 | 882,043 |
| South Eastern Metropolitan Co. | 1902 | 2.5 | 50,167 |
| South London Tram Co. | 1902 | 13.25 | 232,144 |
| London Deptford and Greenwich Co. | 1904 | 6.9 | 96,327 |
| Woolwich and South East | 1905 | .8 | 49,825 |
| London Southern Lines | 1906 | 5.7 | 65,000 |
| North Metropolitan Co., for surrender of lease and for horses, cars, depots, etc. | 1906 | ..... | 341,202 |
| | | 103.27 | |
| Total (£120,000 of it being for surrender of North Metropolitan lease) | | | £2,522,577 |

The London County Council has paid £2,402,577 for 103¼ miles of line, with depots, land, horses, and other equipment, and £120,000 for the surrender of a four years franchise on 48 miles of the system.

Practically all the lines in the County of London have been acquired by the Council. The chief exceptions are 4 miles belonging to the London United Tramways Company, 2 miles belonging to the Harrow Road and Paddington Lines (the lease of which expires in 1907), and the London Southern lines from Vauxhall to Norwood and Camberwell.

The purchase prices have been very large, because of the enormous value of land in London; and the cost of rebuilding is very large because of the difficulties of electric construction in a city like London, and because the law will not permit the use of the overhead trolley, so that all the lines have to be built on the underground conduit plan. The cost of widening streets in the case of the London lines has also been exceedingly great, and a considerable part of this cost has been charged to tramway capital. The paving is also of a much more costly character than in other cities. The standard is higher than for any of the company systems including the London United, because of the heavy traffic in the city.

Out of the 128 route miles of tramways in London, the County Council owns and operates 115 miles, including all the lines it has bought and built. It is operating 55¼ miles by electricity (21 miles of which have been opened since April 1, 1906), and is

reconstructing other lines for electric traction. The rest are still operated for the present by horse power.[4]

The reasons given for the adoption of municipal operation in London are similar to those we have met with in other cities. Under the company management there were many complaints of poor service, infrequency of cars, bad condition of the tracks, the companies failing to keep up the paving between the rails and 18 inches beyond, etc.

The lack of unity or co-operation among the tramway companies was also a serious drawback; the separate companies operating independently, with no adequate relation between the various services, entailed much inconvenience and expense upon the traveling public. Again, there were constant disputes between the companies and the government as to the rights and duties of the companies under the leases. Moreover, the companies would not extend their lines except where they could see clear promise of financial gain. It was not to be expected that the companies would go beyond the limits they thought would pay, but the Council could deal with larger considerations. If the line would open up a large area, where working people could secure good homes, with trees and grass and fresh air in place of brick pavements and air that has been cooked, it would not be so necessary for the Council to calculate the profit, as in the case of a private company. The men worked long hours at low pay. The Council had tried to protect the employees by inserting conditions in the grants, but the attempt to safeguard the interests of the men in this way proved not to be effective. Then there were the profits of the transportation service, which might just as well go to the municipality as to the companies, and finally, the success of Glasgow, Leeds and other cities in municipal operation of tramways was urged as a reason for following their example.

So to unify the tramway system, secure electric traction, and adequate facilties at reasonable rates, carry the working people out of the city to suburban homes, protect the interests of labor, secure control of the streets and get rid of constant contention with the companies, the Council took over the lines and is now operating practically the whole tramway system of the County of London.

The benefits of municipal operation are thus summed up in the London Manual for 1906, p. 118:

(1) The relief of rates from the profits of the undertaking.
(2) The institution of all-night car services.
(3) The running of workmen's cars at reduced rates.
(4) Reduced fares for ordinary passengers on many of the principal routes.
(5) The removal of advertisements from the windows of the cars.
(6) The institution of a ten hours day (or sixty hours per week) for all tramway employees.
(7) The recognition of the principle of "one day's rest in seven."
(8) Increased wages for employees.
(9) Provision of uniforms for drivers and conductors.

[4] Minutes of Council, April 23, 1907, pp. 823, 824.

The following table shows the contrast between municipal and company policy in regard to the hours of labor:

TABLE 13.—HOURS PER WEEK BEFORE AND AFTER MUNICIPALIZATION.

| | *Drivers.* | *Conductors.* | *Stablemen.* | *Ticket inspectors.* |
|---|---|---|---|---|
| London tramways acquired January, 1899..... | 80 | 80 | 77 | 80 |
| South East Metropolitan acquired April, 1902..... | 77 | 77 | .. | 77 |
| South London tramways acquired November, 1902.... | 70 | 70 | 77 | 81 |
| London, Deptford and Greenwich acquired July, 1904.. | 77 | 77 | 70 | 91 |
| Woolwich and South East London tramways acquired May 31, 1905..... | 77 | 77 | 84 | .. |
| North Metropolitan Tramways Company acquired April 1, 1906..... | 70 | 70 | 63 | 70 to 80 |
| London County Council..... | 60 | 60 | 60 | 60 |

The reduction of hours costs the Council many thousands of pounds a year, but the men are not regarded as mere implements, to be bought at the lowest market rates. Civic and social considerations enter into the question of hours and wages under municipal management, as well as economic questions. Mr. Wood, the leader of the Progressive Party in the Council, says: "We regard it as a great advantage to work the men humanely—quite as great an advantage as 1 per cent. more profit." The same spirit runs through the whole management. The Liberals say: "The opponents of municipal ownership haven't proved their case when they say the London tramways are not making much money. We regard it as a paramount advantage to use the tramway system to develop all the resources of the city, and to serve all the interests of a great commercial and residential town."

The average fare per mile was .54d. in 1906, and the fare per passenger was 1.04d. for electric traction, and .84d. for horse traction.

It has been affirmed that the Moderate Party is opposed to municipal operation of tramways, but this is not true. Years ago, when it was thought that franchises and good will would have to be paid for in case the companies were bought out, the Moderates opposed the purchase. But the decision that only structural value need be paid, changed their view, and now they confine themselves to criticizing tramway accounts. In a famous debate in the Council, October 16, 1906, which has been scattered broadcast by the Moderates, under the title "The Tramway Scandal," they took the ground that a larger proportion of general county expenses and of the cost of street improvements should be charged to the street railway accounts (the failure to do this was the "Scandal"),

but expressly repudiated the charge that they were opposed to municipal tramways.[5]

Captain Swinton, "the Party Whip," or official representative of the Moderate Party in the council, declared that the profits shown in the tramway accounts (about £100,000 for 1906) were a myth, because he said street improvements which were charged against the general county fund ought to have been charged against the tramways. He began with a statement of £4,044,844 as the cost of street improvements for the benefit of tramways, toward which, he said, the tramways had only paid £377,260. A couple of minutes later he admitted that over £1,000,000 of the amount he had named were expended for bridges and could not be fairly charged to tramways, and he finally ended with the claim that the tramways owed the county fund half a million—a very moderate claim compared to the four million statement with which he began. The Captain got his original four millions by adding together the totals of two sections of a Parliamentary Return relating to street improvements: Section "(A) Improvements undertaken or proposed in connection with tramway schemes," £1,287,123; and section "(B) Improvements for purposes of general traffic," £2,757,-721. He had no warrant for saddling the tramways with the cost of improvements undertaken for purposes of general traffic, and only a small part of cost of section (A) was properly chargeable to tramways. But the "Party Whip," the commissioned leader of the opposition, does not wait for a warrant to justify his assaults on the administrative party. The speech was simply a party attack on the Progressive Administration and was made and used for election purposes.

The fact is, that the municipal tramways have paid a much larger portion of the cost of street improvements than the private tramways paid before the lines were taken over by the Council. According to the statement made to the Commission

[5] Dr. E. B. Forman, Deputy Chairman of the Council and a leader of the Moderates, speaking of the "change in the tramway policy of the Moderate Party since Sir George Fardell was leader of the party in the Council," referred to the decision that only structural value need be paid and said: "Now that entirely altered the position, and the tramway question became a different thing. The surprise would have been had they not been taken over, and therefore what I say would have been a costly proceeding in Sir George Fardell's time became a good inheritance for the local authority."

Captain Hemphill, speaking against loading the tramways with larger improvement costs, said it looked as though the Moderates wanted to kill the trams. "It seems to me," he said, "that what they are driving at is to kill municipal tramways." (Cries of "No! No!" from the Moderates.)

Mr. R. A. Robinson, Moderate member from South Kensington, said: "When Mr. Wood said he now knows that the policy of the Moderate Party in regard to tramways must be to stop municipal tramways, he made quite a mistake. Perhaps he only made a slip in one little word; I think he must have meant steamboats. If he had said that our policy was to stop municipal steamboats and not tramways he would then have been very likely correct. The idea that we want to stop tramways is wholly a mistaken idea and is one for which there is no foundation whatsoever."

July 3, 1906, by J. Allen Baker, Chairman of the London County Highways Committee, the 7 or 8 tramway companies purchased by the Council had only paid £23,000 for street widenings throughout the whole of London. But after the Council took the lines a much greater burden for street improvements was laid on the tramways. Chairman Baker said: "As a matter of fact, in all cases of street widenings that we have carried through up to the present moment on any of our working lines the whole cost has been charged to the tramway account. And we have assumed capital charges of over £100,000 for further street widenings, where a third has been charged to the tramway account for improvements in streets where there are no trams as yet, and we have paid ten or twelve thousand pounds on interest and sinking fund in advance on those streets and on those new roads—in advance of a single line having been opened or a single car having been run."[6]

This appears to be a sufficiently liberal policy in regard to street improvements. It would hardly seem fair to burden the trams with the cost of improvements made for the general benefit of all traffic, as Captain Swinton desired to do. Where private trams and motor bus companies are not assessed for street improvements, there would seem to be no ground for assessing public trams.

As to the profits claimed in the tramway accounts, we may note that the Commission's experts, after a thorough investigation, certified to net profits of £66,564 for the tramways operated by the Council for the year ending March 31, 1905,[7] a sum within £4,300 of the net profits shown for that year in the accounts issued by the department.

### III—CONTRASTS AND RESULTS.

The contrasts between existing systems are dealt with in the report of the Committee of Four, volume I., pages 270 ff, based on our schedule data.

The general results of the experience of British cities with public operation of street railways, as compared with private operation, may be summed up as follows:

(1) A great reduction of fares, amounting in some cases to more than 50 per cent. on the average, with the introduction of 1 cent fares for short rides, and so great a reduction on the longer routes that on some of them the company charges were 200 to 300 per cent. above the rates established by the public tramways. (2) An equally remarkable improvement of the service, substitution of electric traction for horse power, better cars, greater frequency of service, a better class of employees, and more courteous treatment of the public, which is quite natural since they are stockholders in the roads. (3) The policy of extending the lines into suburban areas with long routes at low fares to relieve the congestion of tenement districts, and obtain a better distribution of population, in place of the company policy of limiting the lines to the best paying areas. (4) An increase of traffic corresponding to the reduction of fares and increase of facilities. (5) A marked improvement in the conditions of labor, through shortened hours and increased wages, free uniforms and yearly vacations on full pay, greater permanency of employment and a share in the control through the ballot for the council, which is the board of direc-

[6] See Minutes of London Meeting of the Commission July 3, 1906, which forms the last section of Volume I.

[7] Schedule IV.

tion of public works, recognition of unions and settlement of disputes by arbitration. Thousands of men have been lifted to a living wage, and relieved of the fear of capricious dismissal. (6) Greater regard for the safety, health and comfort of the public in the operation of trams. (7) Economies through co-ordination of departments and industries, lower rates of interest, better paid and more efficient employees, etc. (8) The appointment of expert managers who operate the roads, not for private profit but for the public service, and who have obtained a high degree of economy and efficiency, and in spite of increased wages, shortened hours and reduced fares, have made large profits for the people. (9) A policy of keeping capital down to structural value, writing off full depreciation, and clearing off loan capital within a moderate period. (10) Full publicity of costs and values and all the inside facts of the business, making a solid foundation for the regulation of rates and capitalization and for true estimates of structural value in case of public or private purchase. (11) A flexibility and progressiveness much greater than the British cities secured under the leasing system or the franchise for a limited term. The public which wants the improvements has now the direct and complete control and can have the improvements it wants when it wants them. Every citizen is a critic and every member of council, and all the critics are part owners who have much more weight with the management to secure improvements in the service they suggest, than the common people had or have with the private managements. (12) Diffusion of benefit and prevention of the evils that grew out of the control of public service monopolies in private interest and the consequent antagonism of interest between the owners and the public. (13) An increase of social and political efficiency through identification of the interests of former company owners with the interests of the general public, the widening of the sphere for civic activity and the development of civic pride and patriotism. A civic co-partnership or co-operation of all for the common benefit is regarded in England as a superior relationship to the co-operation of a few for the exploitation of the rest. Better institutions do not change at once the habits and characters of men, but in the long run they develop a new type of character adapted to and in harmony with the new institutions. Great Britain is already realizing in some degree the advantages of the new civic spirit, which is due in part at least to the development of public operation of public utilities. (14) A care for the cleanliness and beauty of grounds, buildings and cars, which in the best systems has gone so far in the recognition of the esthetic element in business as to abolish advertisements from the cars. (15) A change of fundamental aim and purpose from private profit to public service; from dividends for a few to benefit for all; from management in the interest of part of the people to management in the interest of the whole people. (16) An improvement in the attitude of remaining private managements toward the public and in the service they render, owing in large part to the stimulus of municipal example, the pressure of public opinion enlightened and educated by the results of municipal operation, and the fear of compulsory purchase in case of serious dissatisfaction.

The cities and towns that have not municipalized their street railways have nevertheless received large benefits from the growth of municipal operation. They are not satisfied, however, with reflected benefits, and continue to municipalize the tramways as the leases fall in or the franchise terms expire. The general opinion in Great Britain appears to be that even a company tramway so well conducted as to escape complaint or positive dissatisfaction would still be inferior to a well-managed public system for the reasons already stated in the earlier part of this examination. The history of the municipal ownership movement in Great Britain proves that the people want direct, continuous, and complete control of the public streets and all monopoly uses of them. And they want the profits of the public service monopolies to be devoted to lowering fares and charges, relief of rates, improvement of service and paying off the capital.

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